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Fourth Annual Christmas Meeting  
**LABORATORY SECTION**  
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## A Plan of Health Insurance for British Columbia

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THE Honourable G. M. Weir, Provincial Secretary for British Columbia, has prepared a pamphlet which presents a draft bill on health insurance for British Columbia with an explanatory memorandum. The purpose of this publication is to invite criticism and suggestions in order that the government of British Columbia may set to work on a health insurance act with full knowledge of the views of all interested parties.

The memorandum presents the arguments in favour of health insurance. It is claimed that while people go without adequate medical care, physicians who provide medical care are unemployed. An insurance plan would make possible the collection of large amounts of money, in small payments, from those who now pay nothing at all, or very little, towards the costs of medical care.

The British Columbia draft bill will include wage-earners and other persons earning less than \$200 a month. Farmers may be insured, regardless of income-level, by an arrangement made between the Health Insurance Commission and the rural municipality. In all cases, the dependants of the insured are included. The Commission has power to extend or withhold the benefits of the Act, as it deems wise, for administrative and other considerations.

The purpose of the Act is "to provide for wage-earners, for farmers, for other persons of low income, for indigents, and for the dependants of such persons, so many of all groups as can be readily brought under the provisions of this Act, the advantages of adequate medical service, both curative and preventive, and of cash benefits to replace wages lost owing to absence of the wage-earner from work on account of sickness; and so to protect and to improve the health and well-being of the mass of the population."

### *Contributory Plan*

It is proposed that an insurance fund will be created through contributions from employees and employers. Employees shall not be required to contribute more than three per cent of their wages, and the employer's con-

tribution shall not exceed two per cent of the pay-roll of the insured employees.

All others who become insured persons and who are not employees are to pay the full costs of the benefits which they and their dependants receive. Provision is made for indigents, the government assuming financial responsibility for their premiums and also paying one-half of the cost of administration. The government contribution is not to exceed \$1,200,000 in any one year.

### *Provisions*

The medical benefits which may be granted include the services of a general medical practitioner, medical specialists, hospital service, drugs, and limited dental and home-nursing services.

Provision is made for cash benefits to those who are insured as employees. A waiting period of one week is to be required; the benefit is not to be paid for more than twenty-six weeks and is not to exceed \$10 a week. "The proof of disability shall be a certificate signed by a medical officer of the Commission."

Every qualified medical practitioner has the right to accept as patients such insured persons as select him for their doctor. The actual method of remuneration is left to the decision of the Commission, but specified limits are set, above or below which the Commission cannot go during the first two years.

General medical practitioners are to receive not less than three dollars or more than four dollars per annum per insured person; for the services of medical specialists, not less than eighty cents or more than \$1.20 will be paid per annum per insured person; for maternity care by medical practitioners, 20 cents per annum per insured person; for hospital care, not less than three dollars or more than four dollars per annum per insured person; for drugs, medical, surgical and optical supplies, not less than \$1.20 and not more than two dollars per annum per insured person. On the same basis, eighty cents is provided for laboratory services, fifty cents for a limited dental service, and fifty cents for a limited nursing service.

A sum not to exceed five per cent of the total amount expended may be used by the Commission to provide "additional services to safeguard the health and safety of insured persons, including special care in cases of necessity or under unusual conditions, as in sparsely populated districts, assistance towards the special training of persons providing medical benefits under this Act, and health education."

It is understood that the Health Insurance Fund shall not be used to pay for existing public health services.

### *Administration*

The Act is to be administered by a Commission of five persons: the Director of Social Welfare (Chairman), the Provincial Health Officer, the Chairman of the Workmen's Compensation Board, the Administrator of Health Insurance, and the Director of Medical Services. The last two are

to be appointed as administrative officers, and it is provided that the appointment of the Director of Medical Services shall be made with the approval of The College of Physicians and Surgeons of British Columbia.

The Commission is given broad powers and can make whatever regulations are required for the efficient carrying out of the intention of the Act.

Advisory Councils and Committees are provided. The Advisory Committees will represent the views of those providing the benefits. The medical committee, for example, will have three members nominated for appointment by The College of Physicians and Surgeons. It will represent the medical profession to the Commission, and the Commission is required to obtain their views and advice before dealing with matters which affect medical practitioners or the medical benefit.

The general plan is to secure medical care for the insured through the present channels of provision of medical care. There will be some check on the standard of care given, and payment will be made for service indirectly through the fund. The control of the professional groups in professional matters is safeguarded but, as is necessary for administrative purposes, the Commission is the final authority.

The plan is considered to be financially feasible. Wage-earners will contribute fixed percentages of their earnings. The average payment with the full plan in operation will be \$23 per annum. Married and unmarried contribute the same percentage, so that those without dependants are really being taxed to assist those who have dependants.

The provincial contribution will not be an additional charge on the government, but practically a transfer of moneys now being spent, largely in subsidies to hospitals, to the health insurance fund.

The solvency of the fund is assured by avoiding fixed obligations. Benefits will be granted as the fund permits. The Commission can spend only the money which it has and so cannot run into debt, but it can limit the benefits, and in consequence its obligations, and thus remain solvent.

The Act provides:

1. For the urban employee, as is the case in most European health insurance schemes;
2. For the indigent and thus avoids the creation of a public medical service;
3. For rural areas a medical service based upon the experience of western Canada with the municipal physician.

The Act provides also that the Commission shall have power to investigate voluntary hospital insurance for those with incomes above the health insurance level.

There appears to be ample opportunity to develop and promote the practice of preventive medicine as the plan comes into operation.

# Food Control in Toronto\*

A. R. B. RICHMOND, V.S., B.V.Sc.

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TWENTY-FIVE years ago very little serious consideration was devoted to the subject of food-control proper in Toronto. The staff entrusted with inspection at some thirty-five privately owned slaughter houses and many hundreds of fish, fruit and other general wholesale and retail warehouses and stores throughout the length and breadth of the city numbered two. These inspectors were equipped with a set of scales which they carried about in a horse-drawn vehicle and were apparently mostly concerned with finding light-weight bread and butter, bulging canned goods and lump-jaw cattle, and with the abatement of nuisances caused by objectionable odours due to decomposing foodstuffs and garbage. Any other phases of the subject received scanty attention.

Up to the time of which I speak, and for some time after, the inspection of restaurants, refreshment rooms, bakeshops and poultry killing plants was carried on by the Division of Sanitation, and the supervision of farms supplying milk to Toronto and of dairies and milk plants within the city, by the Division of Laboratories. Plants in which meat-food products, beverages and various confections were manufactured received little or no inspection whatsoever.

As time progressed and it became more fully understood that contaminated foods had been the media by which serious epidemics, as well as individual cases of illness, had been caused, it became more and more apparent that direct and definite action should be taken to ensure a more efficient safeguarding of the food supply.

## THE DIVISION OF FOOD CONTROL

### *Organization*

The personnel of the division consists of a director, an inspection staff of twenty-four, two clerks, and one stenographer. The work of the division includes:

### *Inspection of 2,621 Wholesale and Retail Grocery, Fish, Fruit and Vegetable, and Confectionery Stores*

The work in connection with this section, as in the case of all other sections of the division, is carried on under the general terms of the Public Health Act, the Factory, Shop and Office Building Act, and certain civic by-laws and regulations. These by-laws include regulations relating to the delivery and exposure for sale of meat, poultry, game, flesh, fish and fruit; the exposure of foodstuffs for sale; unnecessary noises; and the use of the common drinking cup, roller towels, or other towels in common use. There is also the plumbing by-law.

\*Abstract of paper read before the Section of Preventive Medicine and Hygiene, Academy of Medicine, Toronto.

The chief responsibilities of this section include ensuring that adequate toilet and lavatory conveniences are provided for the use of employees and that all installations are in accordance with the plumbing by-laws; that those handling foodstuffs are free from any disease which should preclude their doing so; and to condemn and destroy all foods found not sound and fit for consumption. All foods held for sale, particularly cooked foods and those which may be eaten in a raw state, must be reasonably protected from possible sources of contamination and be of wholesome quality. Adequate facilities must be provided for the keeping of perishable foods. The division is responsible also for the weighing of bread and the confiscation of loaves found light-weight; for ensuring that proper, clean garbage cans, with tight-fitting lids, are provided; and for giving instructions on the maintenance of the premises, both inside and out, including living quarters, if any, in a sanitary state.

#### *Inspection of 362 Bakeshops and Confectionery Factories*

In addition to several of those of the preceding section that would apply, the responsibilities of this section ensure that the terms of the Provincial Bread Sales Act and the regulations governing bakeries and the handling, sale, storing and transportation of all bakery products are carried out.

A bakeshop may not be operated in a basement or cellar. According to the terms of the Bread Sales Act, the council of every city, town and village shall, and the council of every township may, appoint an inspector for the purpose of enforcing its provisions. All bakeshops must be licensed to operate, and loaves of bread, with the exception of small bread, must weigh 24 ounces and 48 ounces. Properly adjusted scales must be furnished at all bakeshops for the use of the inspector. When light-weight loaves are found, they are confiscated and distributed to any charitable institution. A quarterly report must be made to the council of the municipality by the inspector—the medical officer of health, showing the quantity of bread seized for light-weight, or tested for adulterant or deleterious material by the analyst of the Provincial Department of Health. During 1934 716 loaves were seized in Toronto as being light-weight, and 18 prosecutions and convictions were registered.

*Confectionery Factories.*—There are no special regulations governing the operation of such places and they present no special problems.

#### *Inspection of Poultry Killing Plants*

Forty-three such plants are distributed throughout the city and are operated under permit issued by the Local Board of Health on completion of the standard requirements contained in the regulations. It is required that floors be constructed of cement or other non-absorbent material and properly graded to a floor drain. The walls must be constructed and finished with some hard, smooth non-absorbent surface to a height of not less than 7 feet. A supply of running water, with sink and hose, must be provided. Adequate light and ventilation are necessary. Killing tanks must be of galvanized iron or other suitable material and must be kept clean.

The great problem in connection with the operation of these plants is the keeping of them and their surroundings in a sanitary state, and the proper disposal of the blood, feathers and other refuse. This calls for constant supervision, particularly during the warmer months, and the best solution of the problem would be the centralisation of killing either at one plant or at several plants located in districts convenient to the trade.

*Live-Poultry Dealers' Stores.*—In Toronto there are 80 of these stores. Supervision, particularly in regard to the disposal of refuse and the keeping clean of the premises and poultry crates by regular washing and disinfection, is required.

#### *Meat Control*

The control of the meat supply by efficient meat inspection by qualified inspectors received early consideration by the division. At that time there existed some thirty-five privately owned slaughter houses within the city, located in residential and business districts. Each one constituted a decided nuisance and, without inspection or supervision, a definite menace to health. By the terms of the Public Health Act, municipalities are granted power to control the meat supply from the health standpoint. It was felt that the concentration of slaughtering under competent supervision is the reasonable solution to the problems of meat control in any municipality. A municipal abattoir to permit of such centralisation for the small dealers was built by the city in 1914. With its opening, regulations governing the operation of slaughter houses were prepared and enforced. As a result, the small houses were closed, the owners either giving up business or occupying accommodation in the new abattoir. At present only 2 remain in operation.

Until 1921 the meat inspection service was furnished by the Health of Animals Branch of the Federal Department of Agriculture, and from 1921 until Dec. 1933 by the Department of Public Health of Toronto, at which time the Federal Department of Agriculture again provided these services in the civic abattoir, leaving only the two private abattoirs to be inspected by city officers. The same standard of inspection has been maintained by the Department as furnished by the Federal Government. That the problem is an important one in public health is again emphasized by the fact that during the year 1933 our inspectors condemned as unfit for food 202 whole carcasses and 12,172 portions of carcasses at the time of slaughter.

*Butcher Shops*, of which there are 880, are operated under license issued by the Board of Commissioners of Police upon the approval of the premises and methods of operation by the Department of Public Health.

No special problems present themselves in connection with this class of business but it is essential that adequate refrigerator facilities be provided for the keeping of all meats, and that all refuse and garbage be properly disposed of.

Should the Medical Officer of Health deem it advisable for any cause, he may, under Section 103 of the Public Health Act, require any butcher to

make an affidavit as to the place at which the slaughter of his meat is carried on, and when it is outside the limits of the municipality such place shall be open to inspection by the medical officer of health of the municipality in which the meat is offered for sale. If a butcher refuses to give such information, he may be ordered to discontinue the sale of meat in the municipality. The Department has, on occasion, taken advantage of this useful clause in the Public Health Act.

#### *Meat Products Plants*

We consider the supervision of meat-food products plants, of which there are 56 in operation, as an important branch of our work.

It is essential that only strictly fresh and wholesome meats be used in the manufacture of sausages, potted head, meat pies, and similar products. The inspector must ensure that all equipment is kept strictly clean and that adequate means are provided for the disposal of garbage and for the discharge of cooking odours. Any evidence of adulteration of any kind, such as colouring, or the use of too great a quantity of filler in sausages, or the use of preservatives, is referred by us to the office of the Federal Food and Drugs Department, Toronto, with whom we work in close co-operation.

#### *Beverage Plants*

There are in the city at present 64 beverage plants.

When some years ago we started our inspection, many of the conditions found almost beggared description. As a result of our activities in connection with the betterment of conditions in such plants in Toronto, the provincial authorities provided an amendment to the Public Health Act in 1923, with regulations made thereunder which gave the necessary authority for an adequate supervision by the municipalities of all beverage plants. A further amendment was made in January, 1932. The act requires that all beverage plants must be operated under a written permit from the Local Board of Health. The responsibility for inspection rests with the municipality. Manufacturers are not permitted to use stoneware, crock or other opaque containers unless authority has been obtained from the Provincial Department of Health.

The chief problems in the control of beverage plants, in addition to those already mentioned in connection with food establishments generally, include the location and structural suitability of the plant; water supply; type of containers used; and adequate facilities for washing and sterilising containers and equipment. Provision of a suitable syrup manufacturing room, separate from the rest of the premises, is essential. Suitable containers for the crown tops and for the storing of ingredients must be provided. Suitable equipment, properly installed in accordance with plumbing regulations, is required. In exercising control, samples of the products should be collected periodically for analyses and, when necessary, investigation should be promptly made.

Supervision is maintained also over 51 simple syrup plants, 12 pickle plants, 5 peanut butter plants, 9 maraschino cherry plants and 8 brewery plants.

*Inspection of Restaurants, Refreshment Rooms and Hotel Kitchens*

Here the problem of control is simplified by the fact that all such places, 2,622 in number, are operated under license issued yearly on the recommendation of the Medical Officer of Health. Essential regulations relate to the construction and location of the premises, including light, ventilation, plumbing, and the discharge of cooking odours; proper provision of storerooms and refrigerators, and the position of furniture in relation to maintaining the cleanliness of the floors. To provide adequate washing and sterilizing facilities for all eating and drinking utensils two sinks are required. Dishes and utensils are first scraped, washed in the first sink in hot water containing a suitable cleansing agent, and then placed in a wire basket and immersed in the deep sink adjoining, which is filled with boiling water or water at a minimum temperature of 180° F. The use of drying cloths is discouraged. Thermometers are used by the inspectors in testing water temperatures and it is gratifying that the average temperature of the sterilizing water is gradually being raised. Mechanical washing and sterilizing machines are in use in several of the large restaurants. Proper protection of the premises and foods from flies, dust and vermin must be provided, together with a satisfactory means of handling and disposing of garbage. Those handling foods in restaurants and refreshment rooms are required to supply a medical certificate on being employed and again each year while so employed. The regulations require the wearing of suitable clothing and the provision and satisfactory location of adequate toilet conveniences and dressing rooms for employees. A large proportion of our eating places are operated by those of foreign birth, in whose countries the standard of sanitation may not rank as high as in Canada. We have found that such owners and employees are amongst the cleanest in person and habits and the most sincere in their desire to meet all requirements.

*Control of the Milk Supply*

No investment of money which an enlightened community can make will be repaid with greater returns and satisfaction than that judiciously made in procuring a clean and safe milk supply. In Ontario the necessary authority for milk control is obtained from the Public Health Act and the Milk Act of 1927. In Toronto a milk by-law and a regulation dealing with pasteurization supplement this legislation.

All of the 3,500 farms from which milk is shipped to Toronto are under the supervision of the Department and careful records are kept of conditions on every farm, of the results of sediment tests, and of analyses made from time to time of samples from each individual farm as received at the dairy.

For administration, the area from which milk is received in Toronto is divided into five districts, with approximately 700 farms to each inspector. It is the inspector's duty to visit the farms as often as possible. These inspectors are graduates in veterinary science and, previous to graduation, had experience also in agriculture. With this background they are able to discuss with the producers and others on the farm the essential points in the

production of safe, clean milk. Their purpose is primarily instructional, but by the use of suitable score cards and their reports of samples received, marked improvement has been obtained in the quality of the milk supplied to the city.

Attention is also given by the Department to the transportation of milk to the city. All cans must be properly sealed with seals bearing the initials of the shipper, and every effort is made to urge delivery with the least possible delay and with proper protection in transit.

Close supervision of the processing in the dairy plants is maintained by the Department. At present there are 54 dairy plants operating in the city. Dairy plant inspectors give particular attention to all steps of the pasteurization process, to the methods of washing and sterilizing, and to capping and the after-care of the filled bottles. Attention is given also to the sanitary conditions of the plant and to the personnel employed.

In reviewing the milk control as exercised by the Department of Health, the following features are of great assistance: no farmer may ship milk until he has been granted a permit to do so, which is issued only on the recommendation of the veterinary inspector; and all milk trucks are licensed annually by the city and are required to conform to certain regulations. Further, all dairy plants are operated under an annual license from the city, granted only on the guarantee of certain undertakings. Finally, all dairy plants, creameries, ice cream plants, and cheese factories are operated under an annual license granted by the Department. No "certified" milk is now sold in Toronto.

As a result of the activities of the milk control staff of nine persons, during 1934, 10,951 visits were made to farms and milk was temporarily excluded for one or more of the following causes—namely, sediment, temperature, chemical standard, improper sealing, or unsatisfactory farm conditions—in 389 instances. Condemnation of milk at the dairy plants amounted to 259 gallons. A total of 24,558 bacterial and chemical analyses were made of milk and milk products; and 4,916 examinations of empty bottles and cans for sterility and 17,741 tests for sediment content.

This survey indicates some of the problems and the endeavour of the Department to meet them. It may not be unprofitable to indicate some objectives which the Department has in mind. In reference to meat supply, a complete control is desired by prohibiting the sale within the city of any but efficiently inspected products. In regard to milk control, better transportation conditions, the adoption of a more satisfactory bottle cap, and the sale of milk in restaurants and refreshment rooms in the original container, are greatly to be desired. In the safeguarding of food products, much would be gained by the licensing, for purposes of control, of all places in which foods are handled in any way. The general adoption of the wrapping of bread would be a safeguard.

It is significant that during the past year only 756 complaints of all descriptions were received by the Division of Food Control. Many of these were unwarranted but all were investigated and dealt with.

# Some Preventive Aspects of Mental Hygiene as related to Schizophrenia\*

E. P. LEWIS, M.D.

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IT may be well in beginning this paper to try to define mental hygiene, for since the term was coined in 1908 it has had many meanings and has invaded many fields. One recent writer has described mental hygiene as the application of science to help men, women and children make sane adjustments.

We wish to show briefly how we attempted in the Out-Patient Clinic at the Toronto Psychiatric Hospital to deal with one particular type of maladjustment that we have met in children and adolescents. I refer to schizophrenia and schizoid conditions. The frank psychoses appear rarely in childhood, and of these dementia praecox or schizophrenia is probably the most frequent. A brief survey of the ideas of some outstanding psychiatrists upon the nature of schizophrenia and the reports of investigations as to its incidence among children may be of value.

Kraepelin (1) considers that dementia praecox consists of a series of states, the common characteristic of which is a peculiar destruction of the psychic personality. The effects of this injury predominate in the emotional and volitional spheres of life. Of his cases 3.5 per cent developed before the age of 10 years, 2.7 per cent between 10 and 15 years, 21.7 per cent between 15 and 20 years, and 57 per cent before the age of 25 years; that is, 84.9 per cent developed before the 25th year of life.

"The determination of the point of time at which the disease began is often very uncertain and arbitrary owing to the development being so frequently insidious."

Bleuler feels that those cases are more unfavourable in which from childhood abnormal qualities have appeared. The forms which begin in the years of development are by preference states of excitement, then simple depressive forms, and insidious dementia.

Dr. Macfie Campbell (2) has seen fit to delimit schizophrenia. He states that "the schizophrenic type of reaction seems to be characterized by diminished interest in, and adaptation to, the workaday world; increased interest in subjective creations or phantasies which are freed from control of ordinary logical or scientific thought; the frequent occurrence of hallucinations, odd and fragmentary utterances of little adaptive value in relation to the present situation."

Dr. Adolf Meyer (3) regards schizophrenia as the outcome of progressive maladaptation of the individual to his environment. From a careful study of patients, and especially of their history before any breakdown was recognized by friends or relatives—a line of investigation commonly neglected—Meyer con-

\*Presented before the Mental Hygiene Section at the Twenty-fourth Annual Meeting of the Canadian Public Health Association, Toronto, June, 1935.

cludes that schizophrenia is the end result of an accumulation of faulty habits of reaction. He regards it as the effect of unfavourable influences of life and education on personalities with abnormal dispositions and he points out certain measures to prevent its development: (1) promote general bodily health; (2) avoid one-sided training in brain work; and (3) assume that a vigorous body grown under natural conditions will be in a better position to overcome the danger than a child exposed to the influences of effeminacy, of poverty, and of exact routine, and especially of city education.

In a discussion in the section of psychology at the annual meeting of the British Medical Association held in Toronto in 1906 Dr. Meyer stated:

"Etiologically the constitutional make-up counts for a great deal, but not in the vague sense of heredity and degeneracy merely. There is much more to be had in the study of deterioration of habits and undermining of instincts and their somatic components.

"Therapeutically, this way of going at cases will furnish the best possible perspective for action. We stand here at the beginning of a change which will make psychiatry interesting to the family physician and practitioner. As long as consumption was the leading concept of the dreaded condition of tuberculosis, its recognition very often came too late to make therapeutics tell. If dementia is the leading concept of a disorder, its recognition is the declaration of bankruptcy. To-day the physician thinks in terms of tuberculous infection, in terms of what favours its development or suppression; and long before 'consumption' comes to one's mind, the right principle of action is at hand—the change of habits of breathing poor air, of physical and mental ventilation, etc. In the same way a knowledge of the working factors in dementia praecox will put us in a position of action, of habit-training, and of regulation of mental and physical hygiene, as long as the 'mental consumption' is merely a perspective and not an accomplished fact. To be sure, the conditions are not as simple as with an infectious process. The balancing of mental metabolism and its influence on the vegetative mechanisms can miscarry in many ways. The general principle is that many individuals cannot afford to count on unlimited elasticity in the habitual use of certain habits of adjustment, that instincts will be undermined by persistent misapplication, and the delicate balance of mental adjustment and of its material substratum must largely depend on a maintenance of sound instinct and reaction type."

Rümke reported 16 cases of psychoses in children; two aged 9, two 10, one 11, two 12, four 13, one 14, two 16 and one 17. None of these was classed as schizophrenia. Dr. E. A. Strecher (4) reviewed 5,000 consecutive hospital admissions, finding 18 patients under 15 years who presented a psychosis. Four of these were schizophrenic and had ages from 10 to 14 years.

Dr. Howard W. Potter (5) concludes that a typical schizophrenic reaction may appear long before pubescence begins. The outstanding symptomatology is found in the field of behaviour and a consistent lack of emotional rapport. None of his reported cases showed any improvement over a hospital period ranging from 3 to 18 months, even with a carefully organized daily routine modified to suit the individual child.

Kassanin and Kaufman (6) have reported a study of functional psychoses in childhood. They selected all the children who were admitted to the Boston Psychopathic Hospital during the years 1923-4 and 5. Out of a total of 6,000 admissions only 160 were under 16 years of age. Of these, only 65 were diagnosed as psychotic, and of the psychoses 21 were schizophrenic, 13 had encephalo-

litis and 4 had manic depression. They conclude that functional psychoses in children are relatively rare. Heredity was definitely poor in clear-cut cases of schizophrenia and manic depression. Environmental stress had definite causal significance.

In the Out-Patient Department of the Toronto Psychiatric Hospital there were 4,678 *first* admissions from its opening in March, 1926, to December 31, 1934. Of these, 1,918 were children under 16 years of age. Of these there were only 67 children whom we considered as neurotic, psychotic or of psychopathic personality. Three were definitely schizophrenic while 12 had marked schizoid trends.

The idea that schizophrenia tends to develop in introvert types of personality has focused our attention somewhat upon various manifestations of this personality type in childhood with the purpose of modifying these trends if possible. Hence children who are shy, easily discouraged, fearful, unsocial, suspicious, preoccupied, sensitive, not wanting to play with others, not accepted by other children, thought queer by other children, have been regarded by us as needing special attention. Of course it is not true that all who are reserved and retiring are in danger of mental illness, but when such children encounter various home and social demands, and strenuous school competition of various sorts, the result is frequently not good. With this in mind it seems reasonable to pay particular attention to habit training, parent education and the establishment, if possible, of desirable attitudes in adults and others who are in daily contact with such children.

We have found that mannerisms, phantasies, and expressions of strange influences and bizarre attitudes and behaviour have a very unfavourable prognosis. They seem to indicate that the reaction is already well established, as may be judged from the three following cases which are described briefly.

#### *Case I*

M.W., a girl of 13, came to our clinic January 26, 1927. During the previous eight months she was said to have changed greatly—refused food at home and at school, had no interest in school work and cared only for washing and scrubbing. She said that she had gone on a hunger strike in the summer because other children had told her that she was too fat. She took no breakfast, had 4 beans for lunch and half an egg for supper. She cried often for no apparent reason, was very excitable and impulsive at home, and seldom wished to go anywhere. She was very stubborn and would not co-operate in any plans for her and always got her own way from her parents by making a scene. During the next three years she was in and out of various Ontario Hospitals six times—always against advice of physicians. She was diagnosed catatonic dementia praecox.

#### *Case II*

This boy, 15, was brought to the clinic by his father in July, 1929, because he had done poor work in school, was untidy in his habits, and had no interest in companions or work. The following are the significant facts in the family history.

The mother, of German descent, was gentle and would never assert herself. Her feelings were easily hurt and she would not mix with people. She died in 1920 following parturition. The maternal grandfather had been very alcoholic when younger but later became very religious. From the age of 5 to 10 the boy had lived with an aunt. His mother

died when he was 6. When he returned home at the age of 10 his father had re-married, but his step-mother was kind to him. At school he felt that he could not learn, that he was less competent than other boys, although he passed his entrance at 13 and attended technical school. His father said that he had always been different from other boys—was not interested in companions, games or work, although his father repeatedly made intelligent efforts to see that he did so. He said: "I don't play with anybody. I don't play anyway. I read my Sunday School papers. I could work if somebody tells me what to do." He liked to walk alone in the woods.

He was admitted as an in-patient to our hospital on July 31, 1929, and remained till November 24, 1929, when he was discharged, not being considered definitely mentally ill. In January, 1930, he ran away from home "for something to eat", although there was plenty of food for him at home. He continued running away and bunking out. Finally he was certified to an Ontario Hospital where in October, 1930, he was regarded as having schizophrenia.

He had much difficulty with habits of wetting, soiling and masturbation, spent hours in day dreaming and was very uncommunicative. Although repeated attempts had been made to interest this boy in wholesome habits and interests, our feeling is that these efforts had not been made soon enough.

### *Case III*

A boy of 15 was referred by a school principal because of a violent outburst of temper and threat of injury. He walked in an odd way, thought that people on the street noticed him and said that another boy had told him that he was crazy.

His parents were well educated and in good physical and mental health. He had six sisters who were well and held good positions. His early development seemed normal, but he was a little slow at school, reaching the senior fourth at 14.

A year before we saw him he became cranky and "nervous". He would eat only certain foods, resented authority and quarrelled. He did not have any boy friends, took little interest in games and read little. He would alternately talk a great deal and then just sit quietly or look out of the window.

When we first saw him in June, 1930, he was serious but talked fairly freely. He smiled oddly. He said that sometimes in the middle of the night he heard a voice say "Get up". The next week he had invented a system of directing motor traffic in the street by staying in the house and simply moving his hands about.

Advice that he should enter hospital was not accepted.

In July he said that he was better. He had been at camp for two weeks. He slept poorly and worried about his home being unprotected. He said that he had masturbated for ten years. He heard sounds as of people walking on the stairs at night.

The following week he said: "There is something wrong with me. I don't go with other boys. I don't comb my hair. My sisters would kill me because I stick out my chin."

We regarded the patient as definitely schizophrenic and urged hospitalization, but the parents would not hear of it, nor did they do so until another month passed. His behaviour in hospital became more queer, his utterances irrelevant and illogical, and his hallucinations increased.

The symptoms here of withdrawal of interests, preoccupation with special topics, gradual failure in school work, ideas of reference, auditory and visual hallucinations and queer behaviour and speech warrant a diagnosis of schizophrenia; but we are pretty much in the dark as to causal factors, and again were we not requested to help when the condition was firmly established?

We shall now consider several young patients whose schizoid behaviour has proved modifiable through psychiatric and social efforts. Of the twelve who were regarded as schizoid we have favourable results in ten cases. The other

two we have not been able to follow closely because of lack of co-operation of the parents and their complete lack of appreciation of the child's condition. One of these, a girl of eleven, heard voices in the wall, and she would not remove her glasses lest things should drop out of her eyes.

In each of these cases we proceeded with physical, psychiatric and psychometric examination. Any physical defects were recommended for correction and advice was given about personal hygiene. Definite programs were mapped out for individual cases. These had reference to sleep, food, play, work, dress, companions and other wholesome interests. Regularity was stressed and the patient was encouraged to develop initiative. Return visits to the clinic for psychotherapy and careful re-checks were required. One returned fourteen times in two years. Four patients were contacted in their homes by our own social work staff. This was especially valuable as the worker and psychiatrist could easily exchange ideas and modify plans of action. But our staff is very limited; besides many cases were referred by social agencies whose own workers dealt with the cases. The four children whom we supervised were all brought to the clinic by their relatives. They appreciated the fact that something was wrong, and this proved a good foundation upon which to build desirable attitudes in them in relation to the child. Not only do we consider the clinic visits of value, but also the intensive supervision in the home with the whole family by the social worker. Frequent conferences in which all interested parties had a chance to contribute were invaluable in outlining a course of action.

A few brief case sketches may better illustrate our points.

(1) M.B., a West Indian girl of 14, was brought by her mother because she had crying spells, was very excitable, had conflict about her colour and was asocial and refused recreation. Physically she had faulty posture and dental caries, both of which were adequately dealt with. Attention was advised regarding menstruation.

At the first psychiatric examination the girl was almost inaccessible and quite negativistic. She seemed indifferent and mentally far away. The third visit confirmed the psychiatrists in the opinion that intensive work should be done to re-establish her at home, at school, and socially. The home program looked after regularity of meals, of sleep, of personal hygiene and of family attitudes. The mother seemed to realize the importance of treatment, and she co-operated. At school a special course of study was arranged by a most interested principal and teachers. Her recreational outlets included music, volley-ball and gymnasium exercises. In one month she was showing some improvement, and had gained  $9\frac{3}{4}$  pounds, and now after nearly two years this girl seems well adjusted in every way. She was first in a class of 19 at Easter examinations in 1935. She has gained 16 pounds during the past year. She has lots of friends, and she has plenty of wholesome interests.

(2) Case 2 came ostensibly for the alleged taking of a pair of silk hose. This was only a blind as those interested in her felt that she was irresponsible.

The girl was indifferent, apathetic, had almost no friends, was very seclusive and behaved rather queerly. She was extremely careless of her personal hygiene. Physically she was in fair health, but not very clean. Psychiatrically she showed blunting of emotional tone and was quite indifferent and disinterested. Her intelligence was normal.

Her background showed that her parents had died when she was a little girl, and she had lived chiefly in boarding schools, and she lacked ordinary home training. She always

had to be forced to take baths, etc., and she did not learn property rights. She never made friends readily.

Treatment in the line of suitable work with supervision and recreational athletics was at once started and she made steady and marked progress. An interested uncle aided in starting the patient on this program.

(3) A final case is that of a girl of 16 whose mother came to clinic with her because she shunned company, was sensitive and felt that she was losing her mind. Her parents are both living. The father was a poor business man and lost his home. The mother was partly crippled through a motor accident. The home atmosphere was tense.

Physically the girl was 17 pounds underweight, and had decayed teeth and marked facial acne. She showed conflict over masturbation which had been taught her at seven years by another child. Ten weeks before we saw her a woman whom she was visiting learned of this habit and told her that it "would drive her crazy" and that her acne was due to it. She had illusions of perception, seeing faces as elongated. She had some insight. Her intelligence was normal.

With her insight, explanation and assurance were of great benefit. She returned to clinic weekly, and an effort was made to interest her in an active daily program of work and play and to make definite social contacts. We saw her 12 times in 2 months, and she showed definite improvement at each visit, although there were ups and downs. The difficult home atmosphere was cleared up by her going to the Old Country to live with an aunt. We have had reassuring communications from her.

The other seven cases have similar though varying histories, but all show gratifying results of treatment, as viewed over a period of years. Our feeling is that the early recognition of schizoid symptoms in children is important, and that active treatment involving an individual program which has to do with habits of eating, sleeping, working, playing, and making social contacts will prove not only of greatest value, but will possibly prevent serious mental illness.

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# The Contribution of the Nutritionist to the Health of the Pre-School Child

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IN view of the fact that at the present time there is comparatively little supervision of the health of the pre-school child, one is forced to the conclusion that these children are deriving benefit from the fundamental supervision in infancy on the one hand, and from public health and educational measures of this period, on the other hand. However, this haphazard supervision and education are not sufficient, as evidenced by the number of ailments and disabilities found in the children entering school at the age of 5 or 6 years. Not only do many of these children require dental treatment, but many of the school entrants reveal defects in development.

Two important requirements so far as the supervision of the physical health of the children of this age are: firstly, the better instruction of the mothers and fathers in nutrition and the management of children between two and five years of age; and secondly, the early detection of physical defects which are still amenable to successful treatment. In this paper the discussion will be limited to the first requirement.

To assist physicians and social service workers, nutritionists are frequently employed. Nutritionists should be practical housewives with a scientific background, who keep this subject of the right food for health before all who are interested in keeping well people well, and they give advice in special cases. During this period of depression the chief function of the nutritionist is to keep before all those interested in physical and mental health the fact that, as Sherman says, "The better the economy with which food is purchased, the better the chance that the diet will contain all that contributes to positive health."

We shall outline briefly what constitutes the diet of a pre-school child, and then the results of the work of a nutritionist will be shown by citing a few specific cases.

The pre-school child needs at least one pint (20 oz.) of pasteurized or boiled milk per day. This one pint of milk constitutes about one-third of the number of calories necessary. In addition to the food elements supplied by this milk, he needs a little more protein, calcium and phosphorus, and a great deal more iron; he is well supplied with vitamins A and G and has some vitamin B, but vitamins C and D must be supplied from other sources.

Consequently, in addition to one pint of milk, the remainder of his needs may be met by adding the following foods daily:

- 2 tablespoons tomato juice—or one orange, which furnishes vitamin C.
- 1 large potato cooked in skin, or baked, which furnishes calories, iron.

½ cup cooked vegetable, which furnishes vitamins A, B, G.

6 prunes, which furnish calories, iron.

¾ cup whole grain cereal, which furnishes calories, iron, vitamin B.

3 slices wholewheat bread, which furnishes calories, iron, vitamin B.

1 egg or small piece of liver, meat or fish, which furnishes protein, iron, vitamin A.

1 tablespoonful butter, which furnishes calories, vitamin A.

Cod-liver oil, which furnishes vitamins A and D.

1 oz. cheese—3 or 4 times a week, which furnishes protein, calcium, vitamin A.

Each of these foods furnishes other factors too, but they are specially important for those mentioned.

The following are cases as evidenced by a nutritionist:

#### *Case I*

A mother had brought her three children to the Child Welfare Clinic for supervision, and had attended the groups for mothers for three successive years. One of this group of lectures had been devoted entirely to nutrition. A great many of the ideas which she was constantly learning could not be carried out in the home because her husband, although co-operative in the home, would not agree to all the necessary changes, especially in regard to food.

When a group for men was formed in this district, this man went only because he was grateful to the nurse for all the help she had given his wife; more especially for the assistance given her in carrying out explicitly instructions from the hospital regarding the care of a baby who, from birth, had to wear a tracheotomy tube.

At the group for men weekly talks were given for twelve consecutive weeks on such subjects as:

1. The Parents' Responsibility.
2. The Influence of Heredity and Environment.
3. Growth and Development.
4. Parents as Educators.
5. Personality and Character Development.
6. How Undesirable Habits may be Replaced by Acceptable Ones.
7. Fundamental Food Requirements.
8. Diet for Child, Adolescent and Adult.
9. Food Budgeting in the Home.
10. Communicable Diseases.
11. How to be Healthy.
12. Community Health.

A few weeks after this man had commenced attending the group, our attention was drawn to the fact that he, who had not been enthusiastic about giving up his evenings to learn about mental and physical health, was now spending his lunch hour at the factory repeating to his colleagues what he had learned the night before at the lecture.

Shortly after the last child of the family was discharged from the Clinic, the home was visited by the nutritionist in order to find out what had been learned by the mother and father during the year's attendance at the Child

Welfare Clinic. They stated that life was so much simpler; that a great deal of worry had been eliminated because of their assurance that they were doing the right thing for their children; and also that they were having much more pleasure out of doing things together.

In a letter sent to the clinic by the parents the following points were emphasized. The children slept longer in the afternoon than they did formerly. Changes have been made in the choice of foods. More cheese is used. The parents had previously believed that bananas and cheese were harmful foods for children. When meat is used for making soup, the residual meat is incorporated into a baked meat dish in place of being discarded. More interest is taken in the children's teeth and the use of hard, crisp foods is encouraged. The father has curtailed his consumption of sugar. The parents now realize that expensive foods have not necessarily more food value than cheaper foods and that it is essential to incorporate food value into cheaper foods and, at the same time, render them attractive. Economy may be practised by planning meals in advance. Whole cereal, bought in bulk, is used exclusively for breakfast and wheat germ is added to porridge and to muffins. Fried food is not used to any extent. "Left-overs" are baked with cheese and a white sauce for supper dishes. Potatoes are always cooked in the skins. If the father does not like a certain dish he does not now say so since he realizes that this leads the children to refuse foods. The income is now budgeted and a definite amount allotted for food. In this family during the past three years the food allowance has averaged twenty-one cents per person per day and the health of the family has improved.

### *Case II*

A family consisting of the mother, father, and three children was brought to the attention of the nutritionist by the mental hygiene worker of the Health Service of Federated Agencies of Montreal, as needing help in the management and spending of their food allowance. The father was working regularly, earning \$18.00 a week. The mother was attending the hospital clinic following a thyroidectomy and was still in a nervous condition.

The house, situated in one of the poorest neighbourhoods, was small and dark. Under the conditions existing, it was hard to see how any improvement could result from instruction, especially as the family was in debt to the extent of \$45.00 to the corner grocery, which was now over-charging them for food. The mother was earning a small wage working outside the home. With this money she was paying for milk in the school, because the children did not eat the meals which were prepared at home. She was also buying medicine recommended by a private doctor and was not following the instructions received at the hospital clinic. All these difficulties, which seemed so overwhelming to the mother, were discussed with her, and it was explained to her that her health did not justify her undertaking any outside work; that if she wished to continue to look after her family she must follow explicitly the instructions from the hospital and not go to the outside doctor; that milk was not necessary in the

school when adequate food was prepared at home, and that she must gradually pay off her debt to the grocery store and begin to buy and cook economically.

In order to build up a constructive program, the mother was asked to keep a food budget for one week, marking down the amount and cost of all food eaten by the family in one week. This was done by the eldest daughter, as the mother could not write. The budget showed that fresh eggs were being bought at 55c a dozen; boxed cereals only were used; meat was usually bought at the last moment and fried; the amount of jam and sugar was excessive; cheese did not appear at all, and an insufficient amount of milk was being used. After all these points had been explained to the mother in detail, a constructive plan was drawn up stating in simple terms the amount and kind of food that should be used, and the mother began to see that perhaps money could be saved and the debt to the corner grocery store wiped out.

The nutritionist paid only three visits to this family, but many more visits were made by the mental hygiene worker, who encouraged the mother in all the constructive steps she was taking, and in a great many instances gave valuable advice concerning menus, recipes and various methods of cooking certain dishes.

Although this case had looked so hopeless to begin with, at the end of a year the family had moved to a bright, clean, upstairs flat in a better neighbourhood and, in spite of the fact that the rent was higher and that the man had to spend car fare to go to and from work, the family appeared much happier. The debt to the grocery store had been settled, and they were no longer buying their food on credit. Their food was still capable of much improvement, but they had learned to plan their buying so that "last minute" meals were the exception and not the rule. In consequence their money went further, and it seemed more hopeful that a better and simpler way of living would replace one that had been utterly lacking in method.

### *Case III*

When a group for men was formed last winter in a district, the father of a certain family which had never co-operated with the Child Welfare Clinic, was invited by one of his friends to attend; he had been unemployed for three and one-half years. He came regularly to the twelve lectures—three of which were on the subject of nutrition—and the result was that the point of view of this father and his wife changed greatly, as evidenced by their attitude towards their children and towards the public health workers. It so happens that in this particular family the husband is the leader, but his wife is willing at least to try his new methods and see whether they are any better than the old ones.

The following are points taken from a letter received from this man a few weeks after the course of lectures had finished. Although the English has been changed the ideas are exactly as he enumerated them. The children are put to bed at an early hour and now get more rest. Instead of boxed cereals, we use cracked wheat entirely and find it beneficial for everyone. As I do the buying,

I always carry the minimum food budget to the store when I get the relief money, and it goes much farther now that we buy all our food in bulk. I take more interest in the cooking, and the potatoes are now boiled in their skins. We use more vegetables now than before and when the children refuse them we always explain their value—and as a rule they eat them. We have cut down the amount of tea and use more cocoa and milk or some other beverage having food value. We manage to have a cheese dinner once a week and are now eating more fish. Instead of having so much fried food we now have more stews and pot-roasts. It takes longer to cook these dishes but we do not now commence to prepare the meal only half an hour before it is going to be eaten. We use starchy foods to give our bodies heat and energy. I was glad to learn the meaning of the word vitamins.

Since the youngest child of the family was born, the mother comes regularly to the Clinic and follows faithfully all instructions given. It would, therefore, appear that in consequence of a chance invitation which was given to the baby's father to attend the lectures of a local group of men, all the children in this family are going to have a healthier and, we hope, a happier upbringing.

#### *Case IV*

In 1932 a certain mother who had been a school teacher in Ontario brought her child aged 6 to the Child Welfare Clinic. The father of the child had always had an income sufficient for the family to attend a private physician, but hard times had come and these bills could not be met and this mother was advised to attend the Clinic. Although her intelligence was high and she was more than willing to do the right thing, she had never received any instruction about the buying and cooking of economical foods and the adequate nutrition of her children. At the Clinic her attention was drawn to the fact that the child's teeth were very carious and she was advised to go immediately to the dentist. She was asked to fill in a "tooth chart" showing what foods the child had had since birth, the number of caries and the number of extractions; to follow the advice given concerning the foods the child must now have, and to undertake the proper budgeting of her food allowance. She was to report to the nurse every six months in order to tell her what the dentist advised.

Since the first visit to the dentist the "tooth charts" have been sent in regularly and the mother is convinced that the new method of budgeting and the difference in selecting and preparing food for her family account for the lack of dental attention the child now needs.

At nine months old the child had received its first cod-liver oil. In 1932 the child had twenty-four carious teeth at the age of six years, but required no extractions. In 1934 the report showed twelve permanent teeth; the four six-year molars being slightly defective in formation, but the teeth which had received treatment appeared healthy and were causing no trouble.

#### *Case V*

A child eight years old accompanied her mother and baby sister to the

Clinic. The nurse noticed how thin and under-nourished she looked and asked for the reason. The child replied in a very weary voice, "I'm too *tired* to eat." The nutritionist was asked to visit the home. She found that the family had been on relief for two and one-half years. The child's weight had been stationary for two years and she always "picked" at her food. The mother was advised to put the little girl to bed at 5 p.m., giving her her supper on a tray. She attended school all day, but was given half an hour's rest at noon. The mother was instructed how to prepare simple dishes that were new to the child and without extra nourishment or expense the child gained nineteen and one-half pounds in five months. Thus we see that the same food may be utilized to much greater advantage when the parents are taught to avoid or remove the difficulties which interfere with assimilation.

### *Summary*

Group teaching for fathers and mothers is an effective and inexpensive way of promoting health education. Being in contact with others who have similar problems and being able to discuss various points of view throws an entirely different light on such difficulties, minimizing worry and providing a useful outlet for many parents who have few outside interests.

A nutritionist, or any special worker, can accomplish a great deal by having her subject followed up by other workers, such as those engaged in mental hygiene, public health nursing, social work, etc.

The most effective way of influencing people of established habits to change their ways is to give them something concrete to do: to fill in a food budget form, to keep a "tooth chart", or to keep track of gas bills and other household expenses.

Although much has still to be learned regarding the relationship of diet to dental caries, a definite interest is aroused in parents when they are asked to provide a well-balanced diet and at the same time to watch their children's teeth. They attend the dentist more regularly and are more particular about the proper preparation of food.

Over-fatigue is the cause of a great deal of under-nutrition. Consequently, when a daytime rest is established and longer hours of rest are taken at night, there is evidence of immediate improvement.

# Explosions in Sewers\*

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ALL sewer explosions are not spectacular nor of great proportions, nor disastrous, but any explosion may lead to considerable loss of life and property, both public and private, and the subject should be given much more study by those in charge of sewerage systems, manufacturing plants, paint works and paint shops, dry-cleaning establishments, illuminating gas services, electrical conduits, oil refineries, and especially gasoline storage tanks (large and small) and all related equipment such as tank cars, oil tankers, tank wagons and trucks. Explosions in public sewers have been experienced by almost every large city both in America and Europe.

Several explosions have occurred in Montreal during recent years. In 1916 an explosion occurred in a gate valve manhole in which two men were injured. The cause was illuminating gas, ignited by a red lantern burning some twelve feet from the manhole.

In October, 1918, forty thousand dollars' damage to the sewerage system was incurred by an explosion of gasoline in a sewer. No further explosions or fires were reported until 1928, when two sewer fires occurred during the month of July. One was due to a considerable quantity of gasoline from a tank wagon, the other to a factory waste containing naphtha, turpentine and linseed oil. No explosion occurred in either instance but several persons suffered severe burns.

Illuminating gas is generally found at the top of manholes and, with proper ventilation holes in the cover, small quantities of gas will not accumulate. Explosions confined to single chambers are caused usually by the occasional short circuiting of high tension cables. Such an explosion in a conduit system, with the burning of the insulation, may be followed by a smoke explosion.

In the spring of 1934 an explosion of illuminating gas occurred in Montreal. The winter, it will be remembered, was a most severe one with frost penetrating in some instances to a distance of seven feet below the pavement, with a consequent heaving of gas and water mains. Sewer and manhole covers were blown off in this explosion following the ignition of the gas which was escaping from a high pressure main. No damage resulted. Tests made indicated that the upper portion of the sewer manholes alone contained the gas.

Explosions due to methane, commonly known as marsh gas, have been reported in various cities. As the sewerage system of Montreal is on fairly steep grades, no trouble has been encountered from this cause. In the neighbouring municipality of Verdun an explosion from methane gas occurred

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in the spring of 1934 in a valve chamber at the outlet of the main sewer. Two men were badly burned but little damage was done to the building.

The most serious sewer explosions occurred on August 23rd and on the 30th of November, 1932. Both occurred in the main sewer on St. Lawrence Boulevard. The cause of the first explosion was attributed to a large quantity of gasoline which had found its way into the sewer. Serious damage was caused to the sewer, manholes and roadway. The force of the explosion was evidenced by the lifting of the 300-pound manhole covers at various points, one being found in a nearby field 150 feet distant, others 50 to 60 feet away. The force of the explosion caused a sudden displacement of the vapours in the sewer and changed the explosive limit. The flame probably extended to the lower end of the sewer, where manhole covers were blown off only and no material damage was done to the sewer.

#### EQUIPMENT FOR INVESTIGATION

As I was appointed to investigate the cause of the explosion immediately after its occurrence, I had the opportunity of investigating the second explosion in November, a description of which, with the methods employed to meet the emergency, is herewith recorded.

The essential equipment to permit of rapid work in connection with estimating the combustible gases in sewers is a combustible gas indicator. Portable carbon monoxide detectors are also necessary. After making careful study, six Burrell M.S.A. carbon monoxide detectors were purchased and placed in convenient locations in the city.

#### *Combustible Gas Indicator*

Careful study was made of the available instruments for making estimations of the quantity of combustible gas present in air samples. Actual field tests were conducted with three instruments of different makes. In making a choice, the ease and rapidity of operation, the ruggedness of design to permit of its use in wet weather, whether in winter or summer, and its safety when operated in an explosive atmosphere, were the factors considered. As a result, the choice was made of the Johnson-Williams instrument, although other instruments were undoubtedly equally sensitive and accurate.

The principle of operation of this instrument is based on the "Wheatstone Bridge" circuit. When a mixture of air and combustible gas is brought in contact with a hot platinum wire, rapid combination of the gas with the oxygen of the air takes place at the surface of the wire, causing an increase in its electrical resistance. In the Johnson-Williams indicator the change in resistance is made to activate a sensitive 0 to 5 millimeter equipped with a specially calibrated scale. The amount of combustible gas present is indicated by the meter. Two platinum filaments are mounted in small glass protecting tubes inside a metal reaction chamber. Air vapour samples are drawn continuously into the chamber by the operating of a rubber aspirator bulb. One glass protecting tube is sealed against the air-gas mixture

while the other, which is open at both ends, allows the mixture under test to pass before the filament in the open tube. The filament in the closed tube compensates for the variable temperature conditions under which the instrument must operate. Small variations in voltage of 0.1 below the required operating voltage of 2.3 have no appreciable effect on the accuracy of the instrument.

The indicator scale shows in yellow the "dangerous" range and in red the "explosive" range. The "dangerous" section commences at 0.2 (representing about 0.3 per cent by volume of gasoline vapour). This point represents a factor of safety of 5 with respect to the lower explosive limit, which allowance is considered essential to the safety of containers on which work involving the application of heat is to be done. The explosive point represents the leanest mixture which will burn or explode if ignited. It indicates with a fair degree of accuracy the lower explosive limit for all the gases and vapours encountered in industry. The decimal numbers indicate concentration of gas in terms of the amount necessary to form a lower-limit explosive mixture with air. The scale does not check the volume per cent of gas or vapour. If the vapour sample is too rich to explode, the indicator needle will first swing sharply to the red end of the scale and will then fall to zero, giving no further indication. Two no. 6  $1\frac{1}{2}$ -volt dry cell batteries are used in operating the instrument. No portable instrument on the market, to my knowledge, will indicate the percentage of a combustible gas without the operator first knowing the composition of the gas to be tested. For this reason, in tracing the source of trouble as rapidly as possible when the explosion hazard is alone of importance, it is sufficient to know the per cent of explosibility at the lower limit.

One should keep in mind, when investigating gas conditions, the three common gases met with in sewers:

1. *Gasoline or petroleum vapours* will be found in the lower portion of manholes or sewers, and in greater concentration just above the surface of the sewage. Due regard must be made for the time of year, the velocity and the direction of the wind, and barometrical conditions. Explosion of such gases is generally extensive.
2. *Illuminating gas* will always be located near the top of sewer manholes and the amount present is found to be less as samples are taken at a greater depth than 6 feet below the surface. An explosion is generally confined to one, two or three manholes.
3. *Methane* will be found at the top, but the concentration will gradually increase to a certain depth, where it remains constant, in contrast to petroleum vapour, which is found to increase steadily until the surface of the water is reached. An explosion is generally localised.

While waiting for delivery of the two combustible gas detectors, the investigation as to the source of the first explosion was proceeded with by careful inspection and by the questioning of all establishments in the drainage area where explosive or inflammable liquids were used or stored. This in-

vestigation required, lacking the essential instruments, one month and the expenditure of this time might well have been useless if I had not made very special efforts in this detective work.

The combustible gas indicators were received on October 28, 1932. As the explosions were fresh in the public mind, and particularly in the minds of the sewer cleaning gangs, reports were frequently received of the presence of strong odours of gasoline in basements. Each report was investigated immediately. The instruments frequently showed the presence of a very minute amount of vapour, due to delay in the receipt of the complaint. Many cases of washing with gasoline were traced. The opportunity was therefore given for a thorough testing of the value of the combustible gas indicator. Small quantities of illuminating gas were sometimes found in water valve chambers and were easily detected by sense of smell and verified by the use of the detector. The leaking mains were promptly repaired by the responsible company.

#### THE METHOD OF INVESTIGATING

##### *The Serious Explosion of November 30, 1932*

Being advised at 5.20 p.m. of a fire in the sewer at the intersection of St. Denis and Belanger Streets, I found a deep red flame with black smoke and pinkish vapour issuing from the sewer manhole with a roar similar to an enormous blow-torch. The noise was in proportion to the flame, which was roughly 24 by 30 inches at its base, rising above the trolley wires. With a complete knowledge of the sewerage system, testing of the gas in the various related sewer manholes was immediately undertaken, working from this point in all directions. The nature of the gas was not as yet known. Officials of the gas company considered that a large gas main at the intersection might be providing part of the roaring flame. Firemen were stationed throughout the district. A water curtain was instituted in the adjoining manholes and fears were allayed, knowing that further explosions could not occur as long as the gas continued to burn under such pressure and that the direction of flame propagation was upward and not downward. Warning was given to exercise particular care whenever the flame should die down.

The investigation was continued, proceeding in one direction until the concentration of combustible gas was a minimum, then in the opposite direction, making frequent tests. With E. Fournier, Assistant Engineer, as a co-worker, rough notes were made of all instrument readings, their location, depth, etc.

Continuous requests were made from residents for an inspection of their dwellings and inspections revealed frequently the presence of explosive gases as a result of untrapped floor drains. In each case ventilation was advised and the drain filled with water to prevent the inflow of gas. Requests were so numerous that the Deputy Director of Police was requested to arrange to have citizens in the area fill all drains with water, to ventilate basements freely, to make no fresh fires, and not to use a naked flame where the odour of gas was smelt. Suitable announcements were made by radio.

At this time the gas concentration was found to be markedly increasing. A manhole was found with an explosive mixture six feet from the surface and another at three feet from the surface. An explosion occurred in the basement of a convent and shortly after a further explosion was followed by the collapse of a house. A gasoline station suffered an explosion, the floor being raised and all the windows blown out.

Sewer foremen were instructed to open as many manholes as possible to reduce the force of any other explosions. By doing so, cold air entered the sewer, increasing the flow of air and thus flushing out the gas. All open manholes were protected and guarded to prevent the possible ignition of the discharging gases. From this time there were no more explosions. Twenty-five detectives investigated the records of deliveries of gasoline for the day and checked the balance of gasoline in the tanks after deducting the day's sales throughout the drainage area.

The source of the trouble was traced to a large quantity of gasoline the flow of which could not be immediately stopped. The street was closed and during the night and the following day samples were continuously taken. The combustible gas indicator worked perfectly. Less than a minute was required to take a sample at each point—one at the top of the manhole, one at a depth of six feet, and one in sewer near the water surface. The manhole covers were gradually restored and tests were made to check the condition in the sewer, reopening the manholes when necessary. At curves where the gas seemed to accumulate most, the covers were kept open until December 10th, when final tests showed that the sewer was safe to close.

Weather conditions play an important part in determining the character of sewer explosions. In the August explosion the air in the sewer was cooler than the outside air, resulting in a down-draft, and no vapours entered basements of dwellings through unsealed drain connections. In November the opposite conditions prevailed, with a strong up-draft in the sewer carrying the vapours into basements and cellars. In the August explosion serious sewer damage was occasioned but in November little damage resulted to the sewers. The traps in at least 50 per cent of the floor drains were found to be dry. Attention might well be given to reminding the public of the desirability of maintaining floor traps in an efficient condition by frequent filling with water.

In rebuilding the damaged sewer following the August explosion, special forms were made by bending 2 inch steel channels to the required dimensions, thus eliminating the usual cross-bracing required for the centre forms. Twice during the repairs the sewer flowed to full capacity but none of the new work was lost. Manhole covers of a new design were used, having a tapered edge and a special cover seat, permitting of being easily raised. These covers were seen to rise a few inches and fall back into place at the time of the November explosion and no damage to the sewer occurred at this section. The greatest damage was occasioned at a point where the sewer had been offset with reverse curves instead of being laid in a straight line. This had been necessary owing to the presence of a small church directly in the line of the sewer. Gas mains

were cracked in both explosions. Careful examination showed that the cracks were the result of the explosion and not the initial cause. The flow of sewage through the sewer was not interrupted in either of the explosions. Only one small water main was cracked, causing slight flooding of the street.

#### A TYPICAL INVESTIGATION

A Wolf flame safety lamp was added to our equipment, and a small mirror provided so the action of the flame could be noted from above when the lamp was lowered into a manhole. This lamp is used to indicate the diminished oxygen content of the air, which is evidenced by the flame lowering or going out. The lamp also will roughly show the presence of inflammable gases by the height of the flame. The value of the lamp and the combustible gas indicator was well shown in an investigation of the presence of gas odours on the night of March 2, 1934. Starting from the lower end of the drainage system, tests were made at intervals and were found negative until the intersection where the odours were reported was reached. Houses for one block in each direction were impregnated with gasoline odours. In this area were a large garage, two gasoline service stations, a cleaning and dyeing plant, and a repair shop. These were all within three hundred feet of the intersection where the combustible gas indicator showed the maximum concentration. The next manhole in each direction showed a decreased explosibility. Due to a heavy rain, the vapours did not rise in the manhole at the intersection. Using the Wolf safety flame lamp in the sewer, the lamp clearly indicated the source in one private drain connection from a gasoline service station. Sewer manholes were opened to increase the flow of air and the openings were carefully guarded all night.

Gaugings of the gasoline tank showed a loss of thirty-five gallons of gasoline in about seven hours. The tank was promptly emptied and repaired.

#### THE NECESSITY FOR MORE ADEQUATE REGULATIONS

As with other gases and vapours, it is fortunate that before an explosion of gasoline can occur, exact explosive proportions of air and gas must be present. An explosion will not take place if in 100 parts of air there is less than  $\frac{1}{2}$  or more than 6 parts of gasoline vapour. But whenever there is gasoline vapour present, there is sure to be some place in which the vapour in the above proportion is present. This need not be at the point where the gasoline is being used, for there its concentration may be above the upper limit. As this vapour mixes with the surrounding air and changes in volume per cent, somewhere an outer circle of vapour-air mixture of explosive proportions is ready to be ignited.

Regulations have been passed in many cities concerning the discharge of inflammable liquids into public sewers. This, in my opinion, is not enough even with close inspection. Inspection supplemented by the use of suitable combustible gas indicators will be of greater value since persons knowing that any neglect can be easily traced will be inclined to be more careful. However,

sewer explosions will be reduced to a minimum only when measures have been taken to isolate containers completely and prevent the possible leakage of inflammable liquids into sewers. In Europe oil storage tanks are enclosed in leak-proof outer containers, the intervening space being filled with sand. This is a solution of the problem. No drain connection should be allowed between gasoline or oil storage tanks and public sewers. Almost all major sewer explosions have been caused by gasoline vapour and those that have remained unsolved should, I believe, be attributed to this harmless-looking fluid which is more dangerous, in my opinion, than dynamite.

The following report has been appended to Mr. Dowd's paper outlining steps taken to meet an emergency caused by a large amount of gasoline finding its way into the sewers in Montreal East and Pointe aux Trembles in January, 1935.

MONTREAL EAST AND POINTE AUX TREMBLES, QUEBEC  
JANUARY, 1935

Acting as an honorary consultant an investigation was undertaken, with the local authorities, of the sewer conditions following the loss of about 50,000 gallons of gasoline from a plant in Pointe aux Trembles on January 1st, 1935. Owing to the splitting of a cast-iron gate valve on a pipe line leading to several large gasoline storage reservoirs, this large quantity flowed into the adjacent fields covering the ground for several hundred feet, forming a miniature lake. It was the general opinion that the danger would be soon past but it was my opinion that a much more serious danger would exist later when the gasoline seeping through the soil reached the sewers of Pointe aux Trembles as well as of Montreal East. Pumping was employed and the sewers ventilated both by removing the manhole covers and by using large fans at strategic points. The fans were operated by compressed air in order to avoid the danger of a spark from the motor of an electric fan. I urged that pits be dug in the fields to intercept the gasoline. Three days after the original loss of gasoline, conditions became much more serious and in Pointe aux Trembles it was found that the extreme end of a sewer had a layer of three inches of gasoline. This section was blocked off and subsequently other sections of the sewer were also closed, remaining as a constant danger. Explosive mixtures of from 10 to 95 per cent were found both in Pointe aux Trembles and in Montreal East sewerage systems. With the measures taken to increase the ventilation of the sewer and to prevent the seepage of gasoline into the sewers by the digging of pits, improvement of conditions was obtained on January 6th. On January 7th in Montreal East the sewerage system was fairly clear of gasoline vapours, the manholes being kept open. In Pointe aux Trembles explosive mixtures were present but the blocking of certain sewers and the removal of gasoline from the pits by pumping into tank trucks greatly reduced the amount of gasoline vapour in the sewers. Thus the use of the combustible gas indicator and the lessons learned from my previous experience made it possible to prevent serious explosions with disastrous damage which probably would have followed the presence of such quantities of gasoline in the sewers of these municipalities. This was a real test for the J. W. gas detector as the outside temperatures ranged as low as 20 below zero and a large number of tests had to be made quickly. Owing to the fact that gasoline continued to seep into the sewers, explosive mixtures were found both in Montreal East and Pointe aux Trembles sewers when examined on January 3rd and continued to be found until the early part of February. Fans were kept in operation and a special watch was maintained over all openings to prevent the possible accidental ignition of the vapours by persons. It is obvious, therefore, that very serious conditions lasting over a period of weeks may be occasioned by the seepage of gasoline into any public sewerage system.

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## FOETAL MORTALITY

THE full extent of the annual loss to our child population by foetal death is not known, but that which is defined as "stillbirth" is very great.

This mortality is of considerable significance because it represents also a loss in the strength and energy of motherhood and a definite degree of maternal morbidity. Here is a real wastage of human life and vitality about which little is known and about which little has been done. The problem of foetal death is the more important because the causative factors involved are intimately related to those which play a large part in neonatal death and particularly in the death of infants during the first week of life. These two phases of child mortality constitute a field of investigation of major importance for public health workers.

The extent of this mortality is indicated by the fact that in 1933 the combined death rate for stillbirths and neonatal deaths was 68 per thousand live births. Assuming that one-sixth of all pregnancies may terminate in abortion, one in every 19 pregnancies resulted either in stillbirth or neonatal death and one in 30 viable pregnancies ended in a stillbirth.

The second annual report of the Committee on Certification of Causes of Death, which appeared in the August issue of the JOURNAL, indicates some of the important considerations in the problem of foetal mortality. Of fundamental importance is an accurate knowledge of incidence and causation, neither of which we possess at present. In 1931 an attempt was made to secure more reliable national statistics of deaths of viable foetuses by setting up a national standard of stillbirths (which were defined as deaths of the foetus after 28 weeks or 6½ months of pregnancy, measuring not less than 35 cms. in length). There is little doubt, however, that there is still considerable confusion among medical practitioners as to what precisely constitutes a stillbirth. Besides this, there is always a considerable margin of error in ascertaining the period of gestation. Since it is foetal death in which we are primarily interested, the period of gestation of the foetus at death and not

at birth is the important factor. The term "stillbirth," therefore, unless accompanied by an accurate statement as to the period of gestation at death and the length of the foetus at birth, can have no true scientific meaning and records of foetal death which do not include these things are of little real value.

In view of the importance of this question, the desirability of placing the whole subject on a more rational basis by deleting the word "stillbirth" from statistical nomenclature and instituting a scheme of foetal death registration cannot be gainsaid. The elaboration of a workable nomenclature of the causes of foetal death and the introduction of a special form for national foetal death registration remain to be considered. The excellent work which has been done in England in this field by Eardley Holland and his co-workers is most illuminating, and it has been indicated that probably about 50 per cent of foetal death could be prevented by proper antenatal care and improved obstetrical practice in treating the complications of child birth. The more recent investigations conducted by the Health Organisation of the League of Nations into the causes and prevention of stillbirths have indicated that there is here a fruitful field for scientific study and have lent further support to the idea that many foetal deaths can be prevented.

Several tentative classifications of causes of foetal death have been devised. It is worthy of note in this connection that in both Holland and Switzerland, where there has been compulsory registration of stillbirths for a great many years, provision has long since been made for the regular collection of data on the causes of stillbirths. Holland has had such records at least since 1911 and Switzerland since 1906. However, the nosology adopted by Eardley Holland is, perhaps, the most practicable one yet devised and it could well be used as a basis for further inquiry.

It is extremely desirable that a field study of foetal deaths in Canada be conducted in order to collect clinical, pathological and statistical information which would serve as a sound basis upon which finally to formulate a practical list of causes of death and which would provide the necessary information for the discussion of a foetal death certificate which would be suitable for national use and which would contain all the essential facts desired. A satisfactory investigation of the problem of foetal mortality requires the co-operation of provincial registrars, medical officers of health and public health authorities, the medical profession and the Dominion Bureau of Statistics. The importance of securing an explanation of the causation of foetal death is evident. This field is little cultivated as yet, and will well repay investigators in the many branches of medicine which the problem touches.

*A. Hardisty Sellers*

# REPORTS

from the

## Twenty-fourth Annual Meeting

Held in Toronto June 3, 4 and 5, 1935

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### Part IV

#### REPORT OF THE COMMITTEE ON DIAGNOSTIC OUTFITS

**T**HROUGHOUT the Dominion of Canada, provincial and municipal laboratories provide and distribute to physicians suitable outfits for the sending of specimens for laboratory examination. The cost of providing such outfits is an item of major importance. The Laboratory Section Council, after carefully considering the matter, was of the opinion that the Section could be helpful to provincial and municipal departments of health by surveying the outfits now distributed, placing the information before these departments, and recommending the form of outfit which seemed to them the most suitable and as far as possible the least expensive. It was felt that the committee would be in a better position to make such a survey than would any individual department of health. The committee felt also that certain departments were distributing outfits which were considerably more expensive than is necessary and that the findings of the study might result in a very definite economy.

This report deals primarily with the types of outfits and includes a recommendation regarding the most suitable one for each purpose. A study of the data sheets which are enclosed in the outfits is being made and will be reported at a subsequent meeting. The committee is hopeful that the study of diagnostic outfits will be completed by a survey of the cost of each outfit. These figures have not been supplied by all the provinces and municipal departments, and if they are made available this report can be increased considerably in its value. In conducting this study, letters were sent to the director of laboratories in each province and to the municipal directors of several cities. They were kindly requested to send samples of the various outfits and information concerning the good points of each outfit, the type of enrichment-media used, if any, and any difficulties experienced. Outfits were received from 9 laboratories, with detailed information.

To present the findings, the outfits have been photographed in suitable groups as relating to specific uses. Each outfit has been designated by a number for identification, the same number being used for all outfits received from the same department.

#### DIPHTHERIA DIAGNOSTIC OUTFITS

In considering the type of diphtheria outfits, the question arises as to

whether or not culture media should be included in the outfit, as well as swabs. Three of the nine laboratories include media in their outfits. Of these, two are city laboratories and the third supplies a city as well as a province. If media are used, steps must be taken to prevent them from drying. This is essential if outfits are sent to outlying stations for distribution. To prevent this, a cotton plug may be dipped in paraffin, as in number 5. In number 9 a cotton plug is inserted, a metal cap is screwed on, and the cap is then dipped in paraffin. In number 6 no precautions are taken to prevent drying.

When using the culture-media outfits, the physician often forgets to remove the swabs from the media tube and the surface of the media is broken up by the swab and a satisfactory culture is not obtained. However, if this

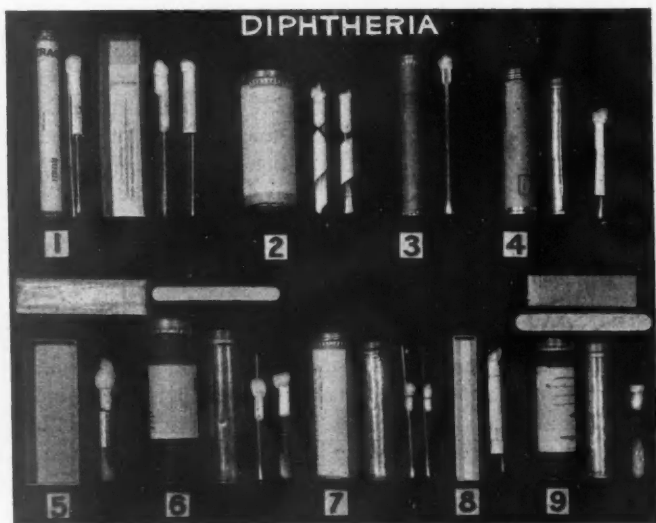


FIGURE I.

swab is not returned with the media, direct smears cannot be made from the swab and a method of rapid diagnosis is eliminated.

The method of making a good swab is important. In number 2 the swabs are too large. They would be unsatisfactory for taking a nasal specimen. In number 5 a waxed envelope is used to contain the swabs and a tongue depressor, while in number 9 there is a tongue depressor with a swab on a wire applicator.

In numbers 1, 5 and 8, cardboard boxes are used. These would not be as serviceable as specially designed mailing cases. In number 2 the mailing case is far too large for the tubes. In number 3 there is no label on the tube. This omission may be serious as in a house where the doctor wishes to take swabs from an entire family there might be the danger of confusing the swabs, even though a data sheet is enclosed with each outfit.

*Recommendations.*—The outfit should contain two tubes with a swab in each tube for nasal and throat smears. Each tube should be labelled and the two placed in a double-container mailing case, with a proper data sheet.

#### OUTFITS FOR SENDING TUBERCULOSIS SPUTA

Should the sputum container for tuberculosis contain an antiseptic or not? This question is important. In numbers 1, 5 and 6, five per cent carbolic acid is used. The use of an antiseptic lessens the danger for the laboratory technician and also hinders bacterial growth in the bottle, thus preventing the production of gas in the bottle and the blowing out of the cork. In many laboratories, how-

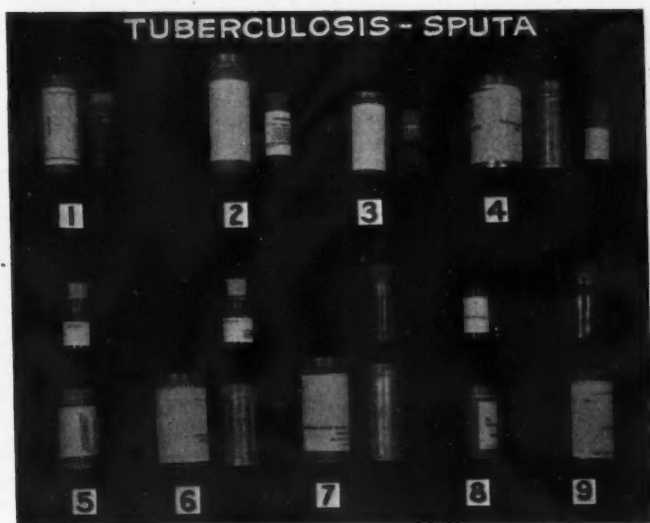


FIGURE II.

ever, tuberculosis cultures are being made from the sputa, and where this procedure is being carried out an antiseptic cannot be used.

A cheap bottle is essential as these bottles should be discarded after once being used. In one laboratory even the mailing case is discarded after being used once. The bottle selected should have a wide neck. In numbers 3, 5 and 6 the neck of the bottle is too small, being only three-quarters of an inch in diameter. This makes it difficult for the patient to use it satisfactorily. Number 2 has a suitable mouth opening but the bottle has a round bottom which is inconvenient to use not only in the laboratory but also when being used by the patient.

The type of cork is important. The cork should be at least one and a quarter inches in thickness as in number 7, and it should be of good quality to prevent any leakage of the contents from the container.

*Recommendations.*—An inexpensive bottle with a wide mouth and a substantial cork stopper of good quality should be selected. It should be enclosed in a double-container mailing case with a proper data sheet. The bottle should be discarded after being used.

#### TYPHOID AND BLOOD CULTURE OUTFIT

In Figures III and IV are shown the typhoid and blood culture outfits. In number 1, two pipettes are used for receiving the blood samples. This laboratory advises physicians to send in whole blood specimens for macroscopic agglutination in a Kahn tube which is supplied. There is provided also a faeces and urine outfit consisting of two bottles, one containing glycerin buffered-saline solution and the other brilliant-green bile solution. Included also is a third outfit containing a vial of suitable broth for making a blood culture.

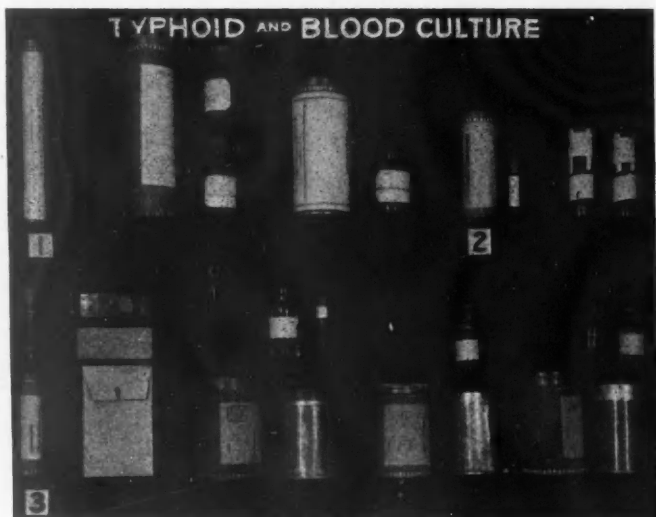


FIGURE III.

In number 2 there is a tube provided for blood, which is rather small, especially in view of the size of the container. There are two containers for faeces and urine in which brilliant-green bile has been placed. Adhesive tape is used to seal these containers, which is not very satisfactory.

Laboratory no. 3 provides a number of outfits. A tube for sending a sample of whole blood for macroscopic agglutination, permitting the making of a culture on the blood clot as well, is supplied. There is a glass slide with an etched portion for receiving a drop of blood. The use of this outfit, however, is discouraged, but in some cases, as in a child or an adult where a blood specimen cannot be obtained from the vein, it is of value. There is, also, a combined outfit in which one tube is supplied for a blood specimen and in the other is a

broth culture medium for making a blood culture. Further, an outfit for faeces, containing glycerin saline solution, is provided. The bottle has a rubber cork with a glass spatula. Finally, there is a combined outfit for faeces in which one bottle contains glycerin saline for typhoid culture and the other a citrated saline to permit of the microscopic examination for amoebae and for the isolation of dysentery bacilli.

Outfits of number 4 and number 6 are similar except that in number 4 there is a swab wrapped in tinfoil for the faeces and in number 6 there is a wooden spatula fastened into the cork. In tube A a sample of blood is collected. Tube B contains glycerin saline for blood culture and tube C contains glycerin saline for faeces or urine culture. This seems to be a very good outfit in

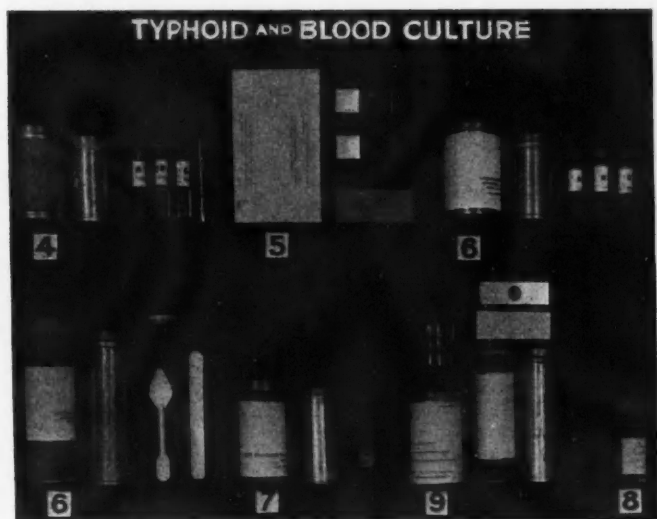


FIGURE IV.

which a blood culture, blood for agglutination, and a faeces specimen can be obtained in the same outfit. The director states: "We are delighted with the results obtained from the use of this outfit, for usually we receive 2 or 3 specimens in the outfit." There are two disadvantages in the use of this outfit: firstly, the glycerin medium is not a good blood culture medium and, secondly, it is not always possible to get a faeces specimen at the same time that a blood sample is taken. If the blood is kept until the faeces is obtained, it might be kept too long.

Number 5 supplies glass slides without any etched portion and there are paper labels on the ends. Number 6 also has an outfit for amoebic dysentery. This seems to be an expensive outfit for such a small container. In number 9 the container is the same as for the sputum and the blood is obtained in a tube as for the Kahn test and a needle is supplied. In number 8 a glass bottle with glycerin is supplied for faeces culture. The cork is, however, of poor quality.

*Recommendations.*—An outfit containing three tubes is recommended. The first tube provides for a blood sample for agglutination, the second tube contains glycerin saline solution for faeces or urine samples, and the third tube or bottle contains a special broth for blood culture. The latter bottle or tube should have a rubber vaccine stopper through which the needle of the syringe can be thrust to expel the blood into the tube. A second outfit may be supplied containing two bottles, one with glycerin saline for culture of faeces and the other bottle either empty or containing saline only for examination of amoebae, parasites, etc.

#### SYPHILIS—SEROLOGY OUTFITS

Should a needle for withdrawing blood be supplied with the outfit or not?



FIGURE V.

In one of the provinces no tube is provided in either the syphilis or the typhoid outfits. In explanation the director states, "For specimens for the Wasserman reaction, we require that the blood should be collected in a Keidal\* tube. A suitable specimen for examination in such an important test is worth fifteen cents to the patient. The patient, physician, hospital and clinic are responsible and no difficulties have arisen."

Physicians often sterilize their syringes with alcohol or other chemicals and, in consequence, the blood cells are frequently haemolyzed. The supplying of a needle obviates this difficulty. It is also convenient for clinics, although there is no reason why a clinic cannot boil the needles and use them without

\*A tube fitted with a suitable sterile needle from which tube the air has been removed and the tube sealed.

syringes as they do when needles are provided. Needles are very costly and where 50,000 tests are performed in a year, an expenditure of \$1,250 would be occasioned for needles.

In number 1 the mailing case is too long, while in number 3 the case is not long enough. In number 2 the tube is about the proper size. In number 3, needles only are supplied at a cost of one dollar a dozen. The needle used in this outfit clips on the side of the tube. In number 5 the tube is unnecessarily large and would be difficult to handle in the laboratory. In number 8 the tube is too small. In number 9 a needle is supplied but without a rubber attachment, which might prove to be often inconvenient.

*Recommendations.*—One tube with a cork such as is shown in Figure V, no. 2. There should be a label on the tube and the cork should be of good quality, with a proper data sheet supplied.

#### SYPHILIS—DARK FIELD OUTFITS

There are two outfits shown in Figure V. In the first outfit there is a tube for a peripheral blood specimen. A second tube contains some capillary tubes for obtaining the chancre serum and a third tube provides paraffin and vaseline for sealing the capillary tubes, as heat must not be used. There are also slides for making smears as well. In the other outfit there is a tube for the capillary tubes and a second tube containing beeswax for sealing the capillary pipettes.

*Recommendation.*—An outfit containing a tube for a peripheral blood specimen, a second tube containing capillary pipettes, and a third supplying the sealing mixture. The glass slides are not essential in the outfit.

#### GONORRHOEA OUTFITS

In numbers 2, 4 and 9, Figure VI, plain glass slides are used, while in number 3 one edge is etched on which one can write in pencil. Numbers 4 and 5 have a single slot in a wooden block, while number 3 has a slot for two slides. If the slides are put in the same slot, they are likely to adhere together. In number 5, paper is affixed on the end of the slides. This is not satisfactory if one emerses the slides in staining.

*Recommendation.*—Two slides supplied with an etched end and placed in a wood block with two slots, one for each slide.

#### MISCELLANEOUS—BLOOD-SUGAR AND PATHOLOGY OUTFITS

A miscellaneous outfit consists of a corked tube containing a swab. The swab may be used or a quantity of pus can be put in the tube and the swab discarded.

In Figure VI, page 456, outfits for examination are shown for samples on which blood-sugar determinations are desired and for pathological specimens. Two of the laboratories supply a blood-sugar outfit and number 3 supplies a similar outfit for non-protein nitrogen. Three laboratories supply pathology outfits. The pathology outfit of number 3 is the best as it has a wide mouth. A charge of \$1.00 per specimen is made by this laboratory.

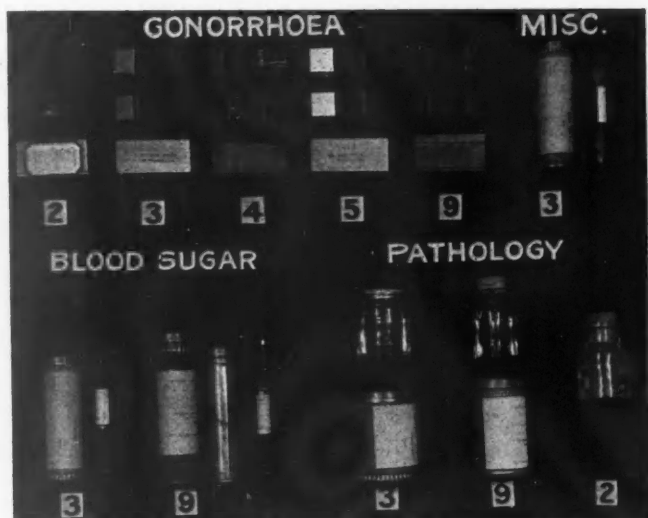


FIGURE VI.

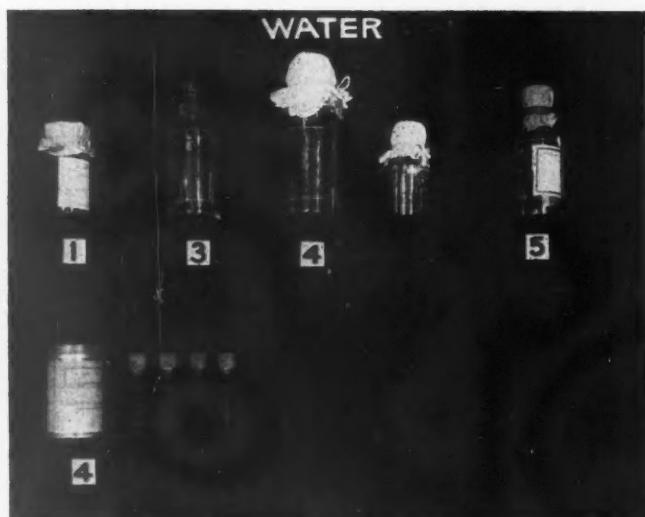


FIGURE VII.

## WATER OUTFITS

There are 5 bottles shown in Figure VII. Number 1 is small. Number 3 has a screw-cap bakelite top covered with surgical silk which can be used again. Number 4 provides a water and a milk bottle. This water bottle is very expensive. It has a wide mouth with a glass stopper. This is covered with tinfoil and then with a piece of cotton. Number 5 has a ground-glass stopper but the director states that a change to the bakelite top will be made in the near future. In the figure, there is an outfit provided by one of the provinces for the special use of water-treatment plants to permit of examinations of treated water. It consists of four bottles containing brilliant-green bile solution. The water is put in these bottles and then sent to the laboratory for examination.

*Recommendation.*—An inexpensive bottle as in number 3, with a bakelite top covered with surgical silk.

## DATA SHEETS

Data sheets should be as simple as possible and no more questions should be asked than are absolutely necessary. If too many questions are asked, the busy physician will not answer any of them. In one of the provincial data sheets for tuberculosis, there was a long string of questions occupying two sides of the data sheet. Certain questions, however, are necessary, such as in serology "Has the patient had previous treatment?" or in diphtheria "Is the case one for diagnosis, release or contact?" A detailed study of data sheets will be presented in a subsequent report, together with comparative costs of the various outfits.

W. B. McCLURE, *Chairman.*

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REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA\*  
BY PROVINCES—MARCH, 1935

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria.....	—	4	3	29	21	21	11	1	1
Scarlet Fever..	—	52	17	568	517	69	56	24	92
Measles.....	—	545	109	2456	7466	622	678	213	153
Whooping Cough.....	—	4	20	420	543	115	176	11	167
German Measles.....	—	50	—	70	3820	94	5	—	71
Mumps.....	—	30	3	126	964	213	2	28	119
Smallpox.....	—	—	—	—	—	—	1	—	—
Cerebrospinal Meningitis..	—	1	—	1	3	—	—	—	3
Anterior Poliomyelitis	—	—	—	6	2	—	1	—	—
Typhoid Fever	—	—	1	70	4	2	2	—	7
Trachoma.....	—	—	—	—	—	—	4	—	3

\*Data furnished by the Dominion Bureau of Statistics, Ottawa.

# EPIDEMIOLOGY AND VITAL STATISTICS

## ENDEMIC INDEX FOR DIPHTHERIA, SCARLET FEVER, MEASLES AND WHOOPING COUGH IN THE PROVINCES OF CANADA AND MORBIDITY RATES, JULY 1934 TO JUNE 1935

*Department of Epidemiology and Biometrics, School of Hygiene,  
University of Toronto*

IN the May issue of the JOURNAL the endemic indices for the four common communicable diseases of childhood were presented for nine months of the year commencing with July 1934. These are now published for the twelve-month period. The incidence of each disease is presented as

follows: New Brunswick and Nova Scotia in November, Manitoba and Saskatchewan in January, Ontario in April and Quebec in May.

*Diphtheria.*—The incidence of diphtheria was below the endemic index in six of the provinces during the whole year. In New Brunswick it was

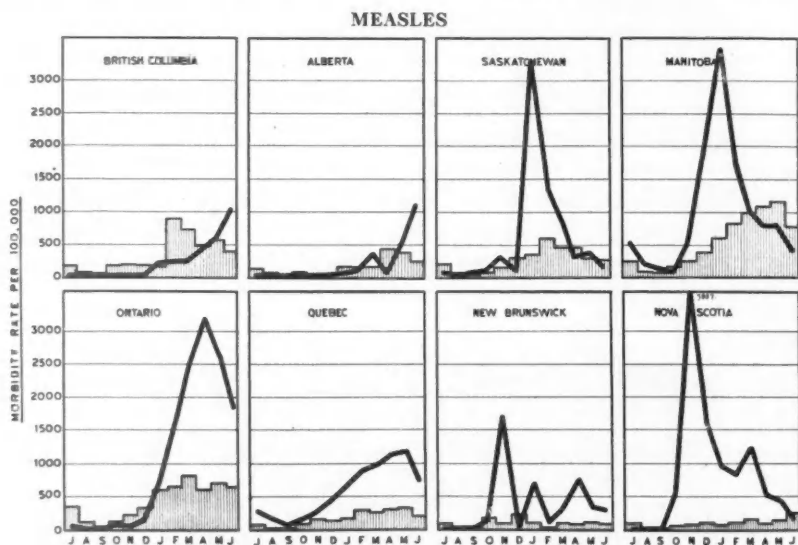


Figure 1.—Monthly morbidity rates, July 1934 to June 1935, for eight provinces of Canada, with the endemic index. The morbidity rate is represented by the black line and the endemic index as the shaded bars.

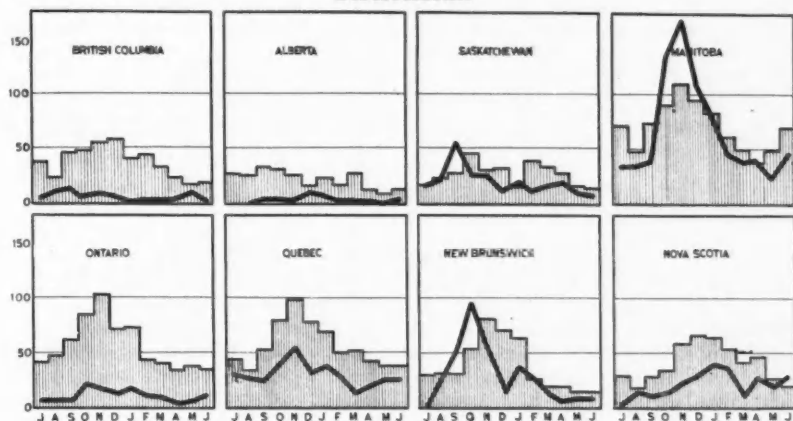
morbidity rates per 100,000 and not as the number of cases. These rates for each month of the year are compared with the endemic index (average rate for a period of years).

*Measles.*—In British Columbia and Alberta the rate was below the endemic index throughout the year but rose sharply above it in June. The other six provinces show evidence of epidemics with the peak months as

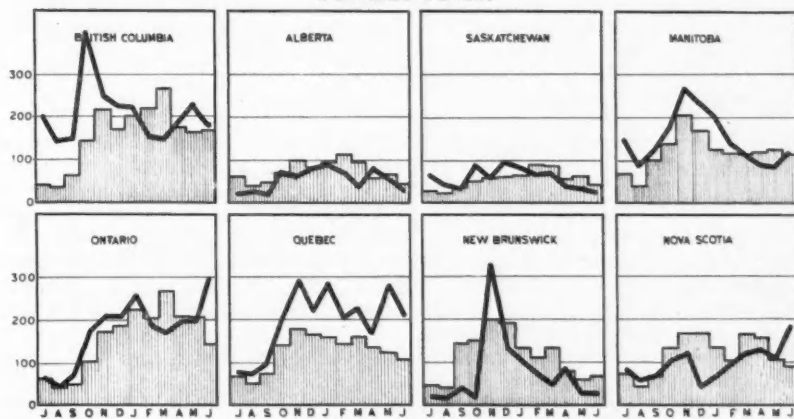
above in September and October and in Manitoba in November and December.

*Scarlet Fever.*—The monthly rates were higher than the average from July to February in Manitoba, and in every month in Quebec. In Alberta, New Brunswick and Nova Scotia the rate was below the average with the exception of one month in each province.

DIPHTHERIA



SCARLET FEVER



WHOPPING COUGH

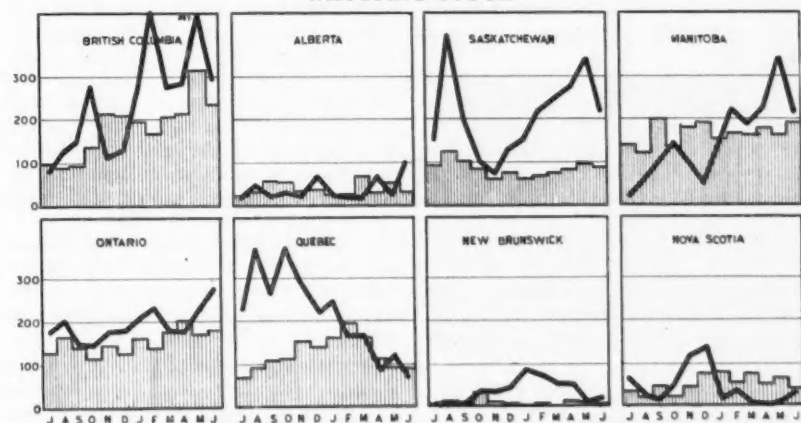


Figure II.—Monthly morbidity rates, July 1934 to June 1935, for eight provinces of Canada, with the endemic index. The morbidity rate is represented by the black line and the endemic index as shaded bars.

*Whooping Cough.*—In British Columbia, Saskatchewan, Ontario and New Brunswick the rate was higher than the endemic index throughout the year. In Quebec it was higher from July to January but below from February to June. In Manitoba it was be-

low from July to January and above from February to June. In Nova Scotia the rate was slightly above the average in the spring months. Alberta maintained a rate approximately equal to the endemic index in practically every month of the year.

## THE IDENTIFICATION OF TULARAEMIA IN NOVA SCOTIA\*

H. G. GRANT, M.D., and A. L. McLEAN, M.D.

*Department of Preventive Medicine, Dalhousie University, Halifax, N.S.*

**P**REVIOUS to 1934 there was no attempt made to identify tularaemia in Nova Scotia. Its existence was, however, suspected. Those who hunted noticed that the rabbits died out every third or fourth year, and several physicians of Halifax expressed the opinion that this condition, epidemic in rabbits, was tularaemia. This opinion was never confirmed by the laboratory. About the year 1912 a number of cases occurred in the vicinity of Petite Rivière and La-Have Islands presenting symptoms of prolonged fever and enlarged cervical glands. It was noticed that many of the patients became ill a few days after handling rabbits; it was noticed also that a severe epidemic was prevalent among the rabbits of that vicinity. Many dead rabbits were found in the woods by the natives. Although several carcasses were sent to the Pathological Laboratory at Halifax nothing definite was established.

One of the writers, in addressing a meeting of the public health nurses of Nova Scotia in the spring of 1934, happened to mention tularaemia and briefly described the clinical features. Following the meeting one of the group, Miss Blanche Martell, the provincial public health nurse for Richmond County, Cape Breton, told of two Indians living on the Government Reservation near St. Peters, Cape Breton, whom she had

nursed in 1930. She expressed the opinion that the two cases had presented symptoms similar to the clinical manifestations of tularaemia. With this information we corresponded with Senator John Macdonald, physician at St. Peters, Cape Breton, and with his help made an investigation in July, 1934.

It was found that four Indians from the reservation, while tramping through the woods during the latter part of October, 1930, came upon a dead rabbit. Two of the men handled the rabbit, cutting it into pieces for bait, and they became ill shortly after. The two who did not handle the rabbit remained well.

*CASE 1—P. S., Indian, male, age 37 years.*

About two days after handling the dead rabbit this man stated he suddenly became ill, suffering from general aching, loss of appetite, and a feeling of chilliness. Five days later he noted three sores on his left hand, and at about the same time pain in the regional epitrochlear and axillary glands. The glands became progressively larger and softer and were incised on January 1, 1931.

From the date of onset until incision of the glands he was quite ill. However, following the operation, recovery was complete in about two to three weeks' time.

\*Presented before the Section of Vital Statistics and Epidemiology at the Twenty-Fourth Annual Meeting of the Canadian Public Health Association, Toronto, June, 1935

*CASE 2—T. B., Indian, male, age 42 years.*

About three days after handling the rabbit this man became quite ill, complaining of general aching, headache, a feeling of chilliness, vomiting, and loss of appetite. Two to three days later a sore developed on each hand. The regional epitrochlear and axillary lymph glands on both sides became very painful and swollen. The axillary glands on both sides went on to the stage of suppuration, finally discharging spontaneously during the early part of January, 1931. The epitrochlear glands, however, gradually subsided without suppuration.

This patient had been very ill, being confined to bed for the greater

part of his illness up until the suppurating glands discharged. After this, however, he felt much better but was not fully recovered until five months following the onset of his illness.

Ten cc.'s of blood was obtained from case 1, case 2 refusing. This was examined at the Provincial Health Department Laboratory by the director, Dr. D. J. MacKenzie; and also by the National Institute of Health, Washington, D.C. Dr. MacKenzie reported an agglutination for *B. tularensis* in a dilution of 1-160; the National Institute of Health reported an agglutination in a dilution of 1-320.

We are especially indebted to Dr. John A. Macdonald of St. Peters, Cape Breton, for the help given us in this investigation.

## LABORATORY SECTION

### AN OUTFIT FOR THE COLLECTION OF PRIVY SAMPLES

FILIP C. FORSBECK, M.D.

*Michigan Department of Health, Lansing*

THE reliability of faeces specimens submitted by typhoid carrier suspects has well known limitations. A carrier may remain undetected because at the time of collection the carrier was not excreting typhoid bacilli; or the carrier substituted another specimen for his own; or the carrier treated his faeces with an antiseptic; or, finally, the specimen was improperly cared for and the organisms, perhaps few in number, died.

With these points in mind, a simple outfit was devised to secure privy specimens as an adjunct to other procedures.

A number 3 stopper is nailed to the sawed end of a broom stick. Glass tubing, 10.0 cm. long and 2.0 cm. inside diameter, is twisted on to the stopper and a privy sample is obtained by pushing the tubing into several parts of the mass in the privy.

Upon withdrawal, the tubing is twisted off into a wide mouthed half-pint jar about 6.5 cm. wide and 14 cm. high, containing 75 c.c. of 30 per cent glycerine. The parts of the outfit are shown with illustration (Figure I).

Twenty-four privies have been sampled. In 15 instances the privy



FIGURE I

specimen was negative and no carrier was discovered in the household using the privy. On nine premises carriers were discovered by examining personal specimens. On these premises, five privies yielded positive and four negative specimens. Obviously a negative sample is of little value. Furthermore, we have never troubled to sample the privy of a typhoid fever case, since a positive specimen under such circumstances would be of little value in determining the presence of a carrier. We are also aware of the fact that men on farms are likely to use the barn rather than the privy.

In one instance a carrier was discovered who without the privy sample would have remained unknown. Only slightly suspected, this carrier had submitted one personal specimen which proved to be negative. The privy sample was positive, which led to the examination of additional per-

sonal specimens. After three negatives a long series of positive specimens was obtained. Whether the first personal specimens were truly negative or whether the carrier was dishonest we do not know.

A privy sample may be obtained more quickly than a personal specimen. Having a suspect notice that a privy sample is being obtained might deter him from substituting specimens. Occasionally a carrier may be found who would otherwise remain unknown. Experience up to date would indicate that most carriers are honest, since in only one instance was a personal specimen negative when the privy specimen was positive.

Privy sampling might be an expeditious way of conducting a carrier survey in communities where typhoid fever is prevalent.

The outfit described is satisfactory and inexpensive.

## NEWS FROM THE FIELD

### Sixty-Fourth Annual Meeting American Public Health Association

**L**EADERS in public health and preventive medicine from all parts of the continent will meet for the sixty-fourth annual convention of the American Public Health Association in Milwaukee from October 7th to 10th. The sessions of the Association are divided among its ten constituent sections. More than 400 papers are to be presented and the preliminary program promises a convention of the greatest interest. Simultaneous with the Association's sessions ten other closely related public health organizations will be convened, including the American Association of School Physicians, the International Society of Medical Officers of Health, etc. The headquarters are to be at the Milwaukee Auditorium. Scientific and educational exhibits will occupy a large section. A number of prominent Canadian public health workers are contributing to the program and it is hoped that Canada will be well represented at this meeting which is centrally located. Special railroad rates will apply. For further information address the Association, 50 West 50th Street, New York.

### British Columbia

**D**R. W. H. HATFIELD, Director of the Public Health Institute for Diseases of the Chest, Vancouver, has been appointed Director of Tuberculosis for the province.

Dr. Frederick Kincaid of British Columbia has been appointed Tuberculosis Officer for Vancouver Island, with headquarters at Victoria. This appointment is part of the new provincial program of tuberculosis prevention and treatment.

Dr. A. D. Lapp, Director of the Tranquille Sanatorium, and Dr. A. R. J. Boyd of Vancouver have been granted Connaught Laboratories fellowships for post-graduate study in public health at the School of Hygiene, University of Toronto.

Dr. Allan Peebles was recently appointed Technical Advisor to the government on health insurance and is serving as chairman of the committee which has arranged public hearings in Victoria, Vancouver and other centres in accordance with the desire of the government to receive opinions about

the health insurance system which the government proposes to inaugurate.

Dr. Douglas Corson, for many years Medical Officer of Health of Fernie, died at his home recently.

### Alberta

**A**NNOUNCEMENT has been made of the appointment of Dr. W. W. Cross as Minister of Health in the provincial government, succeeding the Hon. Mr. George Hoadley, who had served as Minister from 1923.

The opening of schools in Edmonton and Calgary and in the rural district bordering Edmonton has been postponed owing to the prevalence of poliomyelitis. At the close of the first week of September there were approximately 50 reported cases in the province, 23 of which were in Edmonton.

### Manitoba

**T**RAVELLING cancer clinics as an aid in the early diagnosis of cancer are being introduced in Manitoba to permit of the visiting of municipalities throughout the province.

### Ontario

**F**OLLOWING the merging of the Hospitals Division and the Department of Health into one administrative department under the Minister of Health, the Hon. Dr. J. A. Faulkner, Dr. B. T. McGhie, formerly Director of Hospitals, was appointed Acting

Deputy Minister of Health, Dr. W. J. Bell, formerly Deputy Minister, retiring. Announcement was made also of the retirement of Dr. J. W. S. McCullough, Chief Inspector of Health, after 25 years of service in the Department.

Dr. G. Clare Brink has been appointed Director of Tuberculosis and Chief Inspector of Hospitals for Ontario. Four additional travelling clinics are being provided, with headquarters in Ottawa, Belleville, North Bay, and Fort William, respectively. From each of these centres the adjacent municipalities will be visited every three or four months.

Following the incorporation of the Border Municipalities into the city of Windsor, a new board of health was appointed consisting of Dr. Fred Adams, Medical Officer of Health, and five members, all of whom are physicians.

With the objective of having the school population vaccinated against smallpox, Dr. J. A. Bell, Medical Officer of Health of Sarnia, reports the successful completion of a summer campaign in which vaccination clinics were held twice a week. Ninety per cent of the children of school age have been successfully vaccinated.

### Quebec

**A**NEW sanatorium having capacity for 100 beds will be erected in the vicinity of Hull at a cost of \$260,000. Work will be commenced early in October.

## REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA\* BY PROVINCES—APRIL, 1935

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Mani- toba	Saskat- chewan	Alberta	British Columbia
Diphtheria.....	—	12	2	49	15	24	16	2	3
Scarlet Fever.....	—	57	29	424	583	56	33	55	113
Measles.....	—	229	256	2818	9481	479	260	41	262
Whooping Cough.....	—	1	19	260	515	139	224	44	172
German Measles..	—	135	—	194	4142	56	10	—	27
Mumps.....	—	55	2	41	1037	136	6	54	95
Smallpox.....	—	—	—	—	2	—	—	—	—
Cerebrospinal Meningitis.....	—	—	2	5	4	1	—	—	—
Anterior Poliomyelitis...	—	—	—	1	1	—	1	—	—
Typhoid Fever...	—	—	1	46	8	1	—	—	2
Trachoma.....	—	—	—	—	—	2	3	—	4

\*Data furnished by the Dominion Bureau of Statistics, Ottawa.

## BOOKS AND REPORTS

**Fifty Years in Public Health; A Personal Narrative with Comments.** By Sir Arthur Newsholme, K.C.B., M.D., F.R.C.P. Vol. I—The Years Preceding 1909. Published by George Allen & Unwin, Ltd., London, 1935. 415 pages, illustrated. Price 15s. net.

Sir Arthur Newsholme has made many invaluable contributions toward public health progress during his long life. His book, *The Elements of Vital Statistics*, first published in 1889 and several times revised since, is a stimulating and instructive work which every medical officer of health and student of vital statistics should read. Sir Arthur's many other works, particularly perhaps his interesting studies on the relation between the private and official practice of medicine, have been timely and masterly discourses upon real social and public health problems.

It is gratifying, indeed, that Sir Arthur Newsholme has now undertaken to put on record recollections of his long and fruitful career in public health. "Fifty Years in Public Health" deals chiefly with public health first as seen from the viewpoint of private medical practice, and then as seen during experience as a medical officer of health up to the year 1908. The author has been fortunate to live during an era of unsurpassed medical and social progress, and during a time when the first seeds of public health and preventive medicine really began to bear fruit. This fact and his long experience in the government service make this personal narrative and discussion most interesting and informative.

The volume is divided into six parts. The first of these gives a sketch of the author's early life and medical training, while the second is devoted to historical recollections of some of the builders of public health as John Simon, Edwin Chadwick and William Farr. The author then describes some of the highlights of his active career in private medical practice and in active public health work. Perhaps the most fascinating chapters of this volume are those in part four in which the developments in the control of scarlet fever, diphtheria, typhoid fever, tuberculosis and milk-borne epidemics are so admirably recounted. The recollection of the administrative developments in relation to the notification and control of tuberculosis is especially instructive. The last two sections of this volume deal with vital statistics and with infant and child hygiene.

There is something about this book which sets it apart from others of its kind. It not

only gives a panoramic review of a very full public health career, but the discussion of theories and imperfections, old and new, and the presentation of recent opinion, which runs through the whole volume, have served to give the reader history, the background of public health in retrospect, in an absorbing form. The style and method of presentation is excellent. The historical material is so woven with contemporaneous statement and anecdote that no novel may be quite as interesting. Sir Arthur Newsholme has again made a real contribution to public health literature and we will look forward expectantly to the publication of his final volume which will deal chiefly with his years in the government service.

It is a real pleasure to recommend this stimulating and instructive volume to all medical officers and to all other students of public health. Public health workers in America who read this, the first volume of Sir Arthur Newsholme's memoirs, will assuredly await the second with interest.

A.H.S.

**Microbiology and Elementary Pathology for the Use of Nurses.** By Charles G. Sinclair, B.S., M.D., Hawaiian Department, U.S. Army, Honolulu. Revised, 1934. Published by the F. A. Davis Company, Philadelphia, Pa. 377 pages. 102 illustrations. Price, \$2.50.

A more concise and comprehensive book in this field would indeed be difficult to find. The major part of the text deals with microbiology, since this is of more immediate importance in the training of nurses. A broad outline of the general characteristics of bacteria, their distribution and importance, and a concise description of the more important pathogenic groups are included. The author indicates in a practical way the relation of the nurse to bacteria in the duties of her profession. The essential facts are combined to give an excellent view of the fundamentals.

The section on pathology is devoted to a discussion of processes commonly met with in the nursing field. The addition of a chapter on pathological chemistry was a happy thought indeed. The examination of urine, gastric contents, and blood pictures, and other procedures of this nature are things with which a nurse should be familiar in order to be of the greatest service.

The author is to be congratulated on his revision of a valuable text-book for nurses. It presents in a clear and logical style those facts which are of paramount importance for them.

F.O.W.

**International Clinics.** A quarterly of illustrated clinical lectures and especially prepared original articles. Edited by Louis Hamman, M.D., Visiting Physician, Johns Hopkins Hospital, Baltimore. Volumes I and II, Forty-fifth Series, 1935. Published by the J. B. Lippincott Company, 525 Confederation Building, Montreal, Quebec. Volume I, 310 pages; Volume II, 327 pages. Price, each \$3.00.

The first two volumes of International Clinics for 1935 contain a number of special articles to which attention should be directed. "Cholesterol Metabolism" by Dr. A. Cantarow is a valuable review of knowledge acquired in this field during recent years. In his admirable article, "The Treatment of Diabetes Mellitus and its Complications", Dr. Howard F. Root points out that "diabetes is rapidly becoming a practical problem of serious magnitude in the field of public health." Moreover, the increasing recognition of heredity as a background for diabetes brings it into the province of eugenics, while social and economic aspects of the problem are a real consideration. Fourteen other contributions complete this volume.

Volume II includes a discussion of "Heart Pain" of organic and functional origin by Dr. Louis Hamman and Dr. W. W. Hamburger. This discussion is of immediate interest and value to the general practitioner and specialist. Dr. N. J. Eastman's review on "The Anaemias of Pregnancy" in this volume is also noteworthy. Anaemia is an important and much neglected complication of pregnancy and the author expresses the opinion that "every prenatal patient should have one hemoglobin estimation, preferably at the seventh month." Fifteen other articles comprise the remainder of this volume.

The lectures and original articles presented in "International Clinics" cover a broad front. The articles in Volumes I and II for 1935 are as usual prepared by leading members of the medical profession in the various fields. This is their recommendation.

A.H.S.

**Man's Fight Against Disease.** Published by the Metropolitan Life Insurance Company, Head Office—Ottawa. Being largely a reproduction of a series of placards on the history of health, hygiene and medicine, prepared by the Metropolitan Life

Insurance Company and now on exhibition in the United States National Museum, Washington, D.C.

This booklet gives a birdseye view of some of the developments in medicine which have taken place during man's long fight with disease. It consists of a series of plates, each with a brief explanatory note, traversing the period from the time of the medicine man till the monumental contributions of more recent times by Pasteur, von Behring, Reed, Trudeau, Roentgen, Pinel, etc. Other numbers illustrate hospital development, protection of water supplies, the need and growth of health legislation and progress in health bookkeeping.

A.H.S.

**The Depopulation of Pacific Races.** By S. M. Lambert. Special Publication No. 23. Published by the Bernice P. Bishop Museum, Honolulu, Hawaii, 1935. 40 pages.

This publication presents a review of the available population statistics of the Pacific islands. "The history of European contact with the native races of the Pacific has been a tale of infliction on these natives of new diseases against which they had no immunity." Such phenomena are only too well known. The data presented show that the population of the eastern Polynesian islands has declined to an alarming state. It is reassuring to learn that the mid-Pacific islands seem to have passed through the period of decline and are safely on the upgrade. The purely Melanesian islands, however, are still on the decline.

The author reaches the conclusion that disease is largely responsible for the decline observed and, taking Fiji as an illustration, he suggests that the native medical practitioners have played a large part in the racial recovery of this particular group. The benefits of British Colonial administration are well illustrated by the experience of Fiji. The statistics for this island give no indication of "racial apathy towards life, or lack of will to survive" so evident in many of the other groups. The importance of better medical service in the regeneration of these races is emphasized.

To students of the problems of population this work will be of great interest.

A.H.S.

**ROY ROBERT MCCLENAHAN, B.A., M.B., D.P.H.**

**F**OLLOWING an illness which extended over twelve years, Dr. Roy McClenahan passed away on July 19th at Christie Street Hospital, Toronto. For almost the entire period he was confined to bed. Throughout his illness, although knowing full well the hopelessness of the outlook, he maintained a brightness and cheerfulness which inspired his friends at their every visit. His indomitable courage was shared by his wife, who was his constant



**DR. MCCLENAHAN**

attendant both in hospital and at home and whose never-failing encouragement made possible his long fight against almost overwhelming odds. During the long years of his illness he maintained a keen interest in all matters relating to public health, assuming responsibility, as his strength permitted, of reviewing books and reports for the **CANADIAN PUBLIC HEALTH JOURNAL** and giving other valuable assistance as a member of the Editorial Board.

Graduating in Arts and Medicine from the University of Toronto in 1912 as gold medalist, he served as a resident physician at Bellevue Hospital, New York, for two years and for one year at the Hamilton General Hospital. With the advent of the war he was appointed to the Canadian Army Medical Corps with the rank of captain, serving overseas as medical officer to the 54th Battalion. He served

also as officer in charge of sanitation for the 4th Battalion, Canadian Division. He was wounded in 1916 and was mentioned in despatches. On his return from overseas he was appointed director of the Division of Preventable Diseases in the Ontario Department of Health in 1919, which position he filled with great credit until he retired, owing to his illness, in 1923. He also undertook a post-graduate course in public health in the University of Toronto, receiving the Diploma in Public Health in 1921. In 1921 and 1922 he served as general secretary of the Canadian Public Health Association. He was the son of the late Dr. D. A. McClenahan, who served as a district officer of health in Ontario until his death in 1933.

In the few years of his active service in public health work Dr. McClenahan evidenced great ability as a foresighted administrator and as an organizer, possessing a keen critical mind and the broadest human interests. Although his public service was terminated so early in his career, yet the influence of his character in the lives of the many fellow-patients in hospital and of his professional confreres will remain as his greatest contribution.

To his widow, Mrs. Lydia H. McClenahan, to his mother, Mrs. D. A. McClenahan, and to his brother, Harold D. McClenahan, the Association tenders its deepest sympathy.

## CURRENT HEALTH LITERATURE

*These abstracts are intended to direct attention to articles that have appeared in other journals during the past month. Any of the journals referred to may be borrowed for three days or longer if desired. Address requests to the secretary of the Editorial Board.*

### **Infant Mortality in New York City One Hundred Years Ago**

Contrary to popular conception, this paper shows that the infant mortality rate in New York City during the early part of the nineteenth century was relatively low.

Births in New York City were not registered until 1853 so that the birth rate for the first years of the study had to be estimated from the census enumerations and with the aid of recorded deaths. On this basis, a birth rate of 40 and an infant mortality rate under 120 were calculated for the early period of the 19th century. This relatively low rate rose markedly to a maximum of 235 in the sixties and it thereafter declined. It is pointed out that in this period of a rising rate the population growth was accelerated and immigration increased rapidly. Also, wages, overcrowding and housing conditions became worse and the sanitary conditions, especially of the city dairies, markedly deteriorated. In the sixties the Department of Health was organized and health work established. After 1870, the infant mortality rate began to decline. There has been a marked drop since 1900 when the rate was about 140. By 1930 it had dropped to below 60 per 1,000 living births, some of the important factors to this reduction being improvements in the milk supply, the establishment of baby health stations and organized educational efforts.

Charles Bolduan and Louis Weiner, *J. Pediat.*, 7: 55, 1935.

### **Latest Results of Typhoid Serology**

The paper is a general survey of the whole field of diagnostic, prophylactic and therapeutic immunology. It is pointed out that nowadays three antigens can be distinguished in the typhoid bacillus, i.e., the O, the H and the Vi antigen. O agglutination is produced by the new Vi antigen, so called because it is more virulent to white mice than the readily agglutinable forms which are devoid of Vi antigen.

Methods for detecting the Vi antigen are described. Its development depends on a number of factors: (1) the nature and previous history of the particular strain, (2) the medium, (3) the temperature of incubation, and (4) the V-W changes of form.

This latter phenomenon, namely serological changes of form, means a change of

antigen and is separate from the H-O and S-R changes of form. The V form has the Vi antigen fully developed and is consequently O-inagglutinable. The W form has no Vi antigen and is well agglutinated by an O serum. The V-W form has the Vi antigen but is nevertheless agglutinated by an O serum since it consists of a mixture of V and W forms.

In the serological diagnosis of typhoid strains three separate immune sera are necessary: (a) an O serum, (b) an H serum, and (c) a Vi serum prepared by the immunization of rabbits with the V form.

The Vi serum has completely eliminated, the author states, the concept of inagglutinability. In doing a Widal test, the O and H agglutinins should be tested for separately. In searching for Vi agglutinins, living or formol-killed bacilli of the V form must be used and the agglutination reading made after the tubes have been incubated for two hours at 37°C. and kept for twenty hours at room temperature.

As far as experimental work has proceeded it is indicated that: (1) the V forms of typhoid bacilli should be used for the preparation of typhoid vaccines and therapeutic sera; and (2) the potency of typhoid vaccines and therapeutic sera should be tested on mice against a lethal dose of V-typhoid forms.

F. Kauffman, *Quart. Bull., Health Org., League of Nations*, 4: 482, 1935.

### **The Minor Respiratory Diseases as Observed during the Influenza Epidemic of 1928-29 and in a Non-Epidemic Period**

Three hundred and eighty-eight persons belonging to 88 families in Baltimore were observed for acute minor respiratory attacks during the influenza epidemic of 1928-29 and throughout the corresponding period of 1929-30. The excess in the epidemic year was entirely of cases with fever, the 13-week attack rate of febrile cases being 51 per cent in 1928-29 and only 27 per cent in 1929-30. In both these years the afebrile rate was 74 per cent. Both clinically and epidemiologically, one could not differentiate the febrile cases in the so-called epidemic from those of the following non-epidemic year.

W. H. Frost and V. A. Van Volkenburgh, *Am. J. Hyg.*, 21: 647, 1935.

### **Tuberculosis Among Employees of the Minneapolis Schools**

The authors present the result of a special survey of school personnel in Minneapolis. All teachers and employees coming into contact with the children were asked to submit to a Mantoux test or to furnish X-ray films of the chest. All data collected in the survey were considered strictly confidential.

Of 290 persons tuberculin tested, 51 per cent were definitely negative, and of 2,466 who had x-ray films made of the chest, 59 per cent showed no evidence of disease. Seventy-eight showed evidence of parenchymal disease. Directly or indirectly through the survey 6 open cases of tuberculosis were discovered. The expenditure involved was \$5,500.

As a result of the undertaking, all new school employees have to be examined at their own expense on applying for appointment. More important perhaps than the 6 open cases of tuberculosis which were discovered by the survey, will be the interest in tuberculosis control which has been aroused in the teaching profession.

Francis E. Harrington, J. Arthur Meyers, Ida Levine, J.A.M.A., 104: 1869, 1935.

### **Treatment of the Common Cold**

This is the study of the relative value of various drugs in 2,508 cases of acute coryza, 852 cases sub-acute or chronic colds and 205 cases of pharyngitis. A previous study indicated that 35 per cent of patients with coryza recover spontaneously in the space of time upon which these results are based. Therefore, to assume that any of the drugs used were of therapeutic value, improvement must be indicated in much more than 35 per cent of patients.

A combination of codeine,  $\frac{1}{4}$  grain, and papavevine,  $\frac{1}{4}$  grain, resulted in improvement or complete relief of symptoms in 71 per cent of 1,244 patients with acute coryza. The chief effect of this combination is to decrease nasal discharge and congestion. Atropine, ephedrine, amytal, lime and iodine, quinine, and halibut liver oil were used in the experiment and only 40 to 50 per cent of

the patients recorded "definite improvement", which means that probably none of these medications was of real benefit. The course of the disease in pharyngitis or sub-acute and chronic colds was probably not benefitted by any of the medications.

Harold S. Diehl, J. Indust. Hyg., 17: 48, 1935.

### **Rheumatic Infections Occuring in the First Three Years of Life**

From 25 years' records of the Babies Hospital, Columbia University, College of Physicians and Surgeons, the authors collected 24 cases of rheumatic infection in children under 3 years of age. The paper deals with clinical and post-mortem findings. The fatality rate was high; 11 of the 24 died. The clinical picture varies a great deal, often being that of a general infection, although 6 cases were afebrile. The almost constant feature was cardiac involvement, most often endocardial, then myocardial, and in one-third of the series pericardial. The opinion is expressed that rheumatic infection under 3 years of age is more common than is realized.

R. McIntosh and C. L. Wood, Am. J. Dis. Child., 49: 835, 1935.

### **The Control of Communicable Diseases**

This is a report of a committee of the American Public Health Association and officially approved by the United States Public Health Service.

The list includes 59 communicable diseases and 3 others: botulism, food infections and poisonings, and pellagra. The latter are added because of their epidemic occurrence and the practicability of their prevention.

With regard to each disease the items presented are: recognition of the disease with the clinical criteria and laboratory verification; the etiological agent, source and mode of transmission; the incubation and communicable period; and the prevalence of the disease, susceptibility and immunity. Finally, the methods of control are dealt with under three headings: (a) the infected individual, contacts and environment; (b) general measures; (c) epidemic measures.

U.S.P.H. Rep., 50: 1017, 1935.

